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Polonie or Brunswicke

AN

# *INQUIRY*

INTO

# THE SEAT AND NATURE

OF

# FEVER,

*&c. &c.*

XXXV-D

# AN
# *INQUIRY*
# INTO
# THE SEAT AND NATURE
# OF
# FEVER;
# AS
# DEDUCIBLE FROM THE PHENOMENA, CAUSES,
# AND
# *CONSEQUENCES OF THE DISEASE,*
# THE
# EFFECTS OF REMEDIES,
# AND
# THE APPEARANCES ON DISSECTION.

IN TWO PARTS.

## PART THE FIRST.

CONTAINING
THE GENERAL DOCTRINE OF FEVER.

> " ———And give to airy Nothings
> " A local Habitation and a Name."
> *Midſummer Night's Dream,* Act v. Scene 1.

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Member of the Royal College of Phyſicians, London.

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# PREFACE.

TO a perſon unacquainted with the Hiſtory of Phyſic and the imperfect ſtate of its Doctrines, it muſt occaſion no ſmall ſurpriſe to find that a diſeaſe of almoſt daily and univerſal occurrence, and which has employed the pens of the moſt enlightened of the profeſſion for the ſpace of 2000 years, ſhould at the preſent day be involved in doubt and obſcurity; and that the wideſt differences of opinion ſhould ſtill ſubſiſt, both with regard to its nature and the mode of treatment.

That ſuch is really the caſe, however, will be readily admitted by every one the moſt ſlightly verſed in medical ſcience. Phyſicians neither agree among themſelves as to what Fever is, or in what it eſſentially conſiſts; nor have they aſſigned to it any certain and determinate ſeat. One of the lateſt and (as far as I am able to judge) beſt writers on the ſubject of Fever, remarks, in almoſt his opening paragraph, that "what the "real derangement in the ſyſtem is, which "produces the external appearances in Fe- "ver, is not at all known: it is a diſeaſe," he ſays, "the eſſence of which is not un- "derſtood.*"

The little ſucceſs that has attended all the ſpeculations which have been hitherto made with regard to the nature of Fever, appears, undoubtedly, well calculated to diſcourage further attempts of the ſame kind, and to induce a belief that the obſcurity of the ſubject is inherent and inſeparable from it.

Such a hopeleſs view of the matter, however, might lead to practical evil; for it cannot be denied that the practice of phyſic has, in many inſtances, in the reſult, been

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[*] Diſſertation on Fever, by G. Fordyce, M.D., F.R.S., Part I.

materially benefited by hypotheſes which have ultimately turned out to be unfounded. New inſtruments of cure have been often thus ſuggeſted, and the powers and uſes of others more amply inveſtigated. It may be fairly queſtioned, whether the powers of opium, wine, and many others of the moſt active articles of the *materia medica*, would have been ſo well underſtood as they are at preſent, but for the temporary prevalence of particular hypotheſes.

I have not been deterred, therefore, by the ill ſucceſs of former Inquirers from entering the field of ſpeculation on ſo important a ſubject; believing, as I do, that the difficulties which lie in the way will be ſooner or later ſurmounted, and that the moſt beneficial conſequences in regard to practice will be the reſult of a ſucceſsful inveſtigation of it; and that, even in caſe of failure, collateral advantage may accrue.

The Doctrine which I have brought forward, is, to the beſt of my judgment, a fair and legitimate deduction from generally admitted facts, for the truth of which I have appealed to the hiſtory of the diſeaſe, as delivered down to us by the moſt accredited writers and practitioners of all ages. It is ſtrongly ſupported alſo by analogy, and is in uniſon, if I miſtake not, with the general laws of the animal œconomy.

I have endeavoured, as far as poſſible, to adhere to the rules of inveſtigation laid down by SAUVAGES in the Preface to his great and valuable work on Methodical Noſology:— "non ex cauſis nec ex ſede morborum, ad eorum ſymptomata, ſed ex ſymptomatis ad ſedem cauſaſque morborum eſt procedendum, tutòque progredi poteſt medicus."

For further confirmation of the doctrine, I have referred not only to the ſymptoms and conſequences of the diſeaſe as they take place in the living body, but to the appearances diſcoverable after death, as reported by the beſt obſervers.

The advantages to the medical practitioner of a juſt theory of diſeaſes will ſcarcely be denied. Experience, undoubtedly, is a ſure and ſafe guide, as far as it goes; but it is too often lame and defective. It is impoſſible to foreſee and provide adequately for the infinite diverſity of changes that take place in living bodies, without the aid of analogy and induction; the practice of phyſic without theſe muſt ever be incompetent to meet the continually-varying circumſtances of diſeaſe.

When we reflect on the remedies that have been recommended and employed in the cure of Fever, we can not but be ſtruck with their number and variety. Every age, and almoſt every practitioner indeed, poſſeſſed of ſufficient courage to think and act for himſelf, has had his favourite remedies, which have been relied upon as if they were excluſively adapted to the purpoſe; while the practice of others has been conſidered as worſe than uſeleſs.

The choice, in this caſe, has lain not merely between remedies of the ſame general character and operation; but between thoſe of the moſt oppoſite deſcriptions. Bloodletting, ſweating, bliſtering, cordials, refrigerants, acids and alkalines, heat and cold, have all been favourites in their turn, and conſidered as alone deſerving of confidence.

This contradiction exiſts or has exiſted with regard to almoſt every active remedy employed in the cure of Fever, and occaſions the greateſt embarraſſment to the young and inexperienced practitioner. The want of a fundamental principle to guide him in his choice of means has been ſtrongly felt and acknowledged; and it can only be ſupplied, as it appears to me, by the eſtabliſhment of ſome conſiſtent theory of Fever, capable of explaining at once the phenomena of the diſeaſe and the effects of remedies. While we continue to look upon Fever as a general affection, without any peculiar and determinate ſeat in the body, we can never hope to diſcover any thing certain with regard to its intimate nature; nor to be able to lay down any preciſe rules for its cure.

How far the preſent doctrine is calculated to leſſen, or remove, the difficulties above complained of, it is not for me to determine. It is, perhaps, a preſumptive argument in its favour, that it is not oppoſed by experience; but at once explains, and is ſupported by, the effects of the beſt eſtabliſhed modes of cure.

It will be readily admitted, that the taſk I have undertaken is one of no ſmall difficulty or extent; which will ſerve, I may hope, to palliate the imperfect execution of it. It is a taſk, too, that, after almoſt innumerable attempts, has never yet been adequately performed.

The work is divided under two heads. The firſt Part contains the General Doctrine of Fever, according to the principles here aſſumed. The ſecond will contain its particular application to the various ſtates of the diſeaſe, with a more minute examination of the effects of remedies.

In this, I flatter myſelf with the idea of being able to eſtimate, with greater preciſion than has been hitherto done, the value of particular points of practice, the good effects of which, in a general way, are ſufficiently aſcertained, but which at preſent are applied with little diſcrimination; and that from our not underſtanding the circumſtances which may modify the effects of remedies, ſo as to render that proper and uſeful at one time of a diſeaſe which would be hurtful or unneceſſary at another.

The Doctrine here contended for, namely, that Fever conſiſts eſſentially in topical inflammation of the brain or its membranes, would ſeem, at firſt view, to indicate the neceſſity of bloodletting to a great extent, as a general means of cure. A practice of this kind, however, is no juſt or neceſſary inference from the doctrine, as I truſt will be ſatisfactorily ſhewn. Yet the keeping in our view the exiſtence of a morbid vaſcular action in the brain, may be productive of advantage in various reſpects; but moſt eſpecially with regard to the uſe of heating and intoxicating medicines, as ſpices, wine, opium, and the like, which are too often in modern practice carried to a dangerous length.

The moſt obſervant phyſicians at preſent in this metropolis, and I believe alſo in other parts, are becoming daily more and more convinced of the impropriety of an indiſcriminate uſe of remedies of this deſcription, in the treatment of Fever even of the loweſt kind. Yet there are ſtill too many practitioners who adminiſter to their patients, with an unſparing hand, wine and even alkohol, with other things of the ſame general nature, with little regard to time or other important circumſtances.

Debility ſeems to be their only dread; and to counteract this (which is an effect only, and not the eſſential part of the diſeaſe), they reſort to the uſe of means that are calculated to increaſe the cauſe. In this way, they not only fail to effect their purpoſe, but too often ſacrifice the patient in the attempt. —If the only effect of the doctrine here inculcated were that of inducing a greater degree of caution in the uſe of remedies of this ſort, I ſhould think I had performed no ſmall ſervice to ſociety.

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# AN INQUIRY, &c.

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## CHAP. I.

### PRELIMINARY CONSIDERATIONS.

### Sect. I.---*Laws of the Syſtem in Health.*

1. THE human body, conſidered as a machine, is exceedingly complicated, being made up of various more ſimple parts, as blood-veſſels, nerves, abſorbents, &c., connected together in various modes and proportions, ſo as to form the different organs, each deſtined to the performance of its proper functions in the ſyſtem, and governed by peculiar laws.

2. Our ſenſes, even when aided by artificial means, are incapable of detecting the ultimate ſtructure of parts, from its extreme ſubtilty and minuteneſs; we are, of courſe, unacquainted with the modes and proportions in which the more ſimple parts mentioned above (1), enter into the general

compoſition. The ſimpleſt of theſe, indeed, muſt be conſidered as a compound organ; for the ſmalleſt nerve diſcoverable by the eye, neceſſarily has its veſſels; and the minuteſt veſſel, its *vaſa vaſorum*, nerves, and muſcular fibres, for the purpoſes of its own growth, irritability, and action. Nor can any limits be aſſigned to this.

3. The living properties of any part, that is, its ſuſceptibility of impreſſions, and its peculiar modes of acting, depend, in all probability, on its ſtructure, as explained above; at leaſt, they always vary as this varies. But as we have no knowledge of the ultimate ſtructure (2), it muſt follow, that we can know nothing of the mode of acting of the ſimple component parts. When, for example, we contemplate any organ and its functions, as the liver or kidney, we ſee only the ultimate effect, to wit, the production of bile or of urine; but we gain no knowledge of the manner in which each individual part of the organ conduces to this effect.

4. From what has been now ſaid, it is evident that we can have no knowledge of what are termed *proximate cauſes*; i. e., of the exact way in which parts are acting, either

in health or in diſeaſe*. Nor has the inſpection of morbid bodies after death removed the difficulty, for the reaſon mentioned above (2). Diſſection, for the moſt part, ſhews the conſequences only of diſeaſed action, but gives little inſight into the nature of the action upon which thoſe conſequences depend. It ſerves occaſionally to explain the occurrence of particular ſymptoms, and often to detect the ſeats of diſeaſes; though when diſeaſes conſiſt merely in the irregular action of parts, without any change of ſtructure, or at leaſt any that is diſcoverable by the ſenſes, as is frequently the caſe, diſſection is not competent even to this.

5. The ſuſceptibility of impreſſion varies, both in kind and in degree, in every different part of the ſyſtem. Hence powers which act on ſome parts with conſiderable force, exert no action, or a different one, on others. Thus the organ of viſion is ſtimu-

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* The term *proximate cauſe* has been very vaguely uſed by different authors. I have here employed it in the ſenſe in which it is generally made uſe of at preſent; viz., to expreſs the actual condition or mode of acting of the diſeaſed part, and upon which the ſymptoms immediately depend. In this ſenſe, indeed, it is ſynonymous with the *diſeaſe* itſelf, and is therefore improperly termed a *cauſe* of it.

lated into action by the rays of light, but is unaffected by the vibration of ſonorous bodies. The effluvia which excite the ſenſe of ſmell, produce no effect on the organ of ſight. Arſenic, which occaſions ſuch violent effects when taken into the ſtomach, ſcarcely impreſſes the tongue with ſenſation; and, on the other hand, various acrid ſubſtances hardly tolerable in the mouth, are little, if at all, felt in the ſtomach. Cold air, which ſo diſagreeably corrugates the ſkin, is inhaled into the lungs, almoſt without exciting ſenſation. Carbonic acid gas ſpeedily proves fatal, when inſpired in a concentrated ſtate; whilſt the ſame ſubſtance let looſe in the ſtomach, often acts as a cordial. The poiſon of the viper, and a number of other venomous matters, which kill by infuſion into a wound, may be taken, it is ſaid, into the ſtomach with impunity.

6. The ſuſceptibility not only varies in the different parts of the ſame ſyſtem, but alſo in the ſame parts in different perſons. and in the ſame perſon at different times. Upon this, depend the differences of conſtitution obſerved in different individuals, and the peculiarities of age and ſex. Theſe differences of conſtitution are often not diſco-

verable by any external ſigns ; on which account it is difficult, and in many caſes impoſſible, to foreſee the effects of applications that may be made to the body ; which renders the art of medicine in a great degree conjectural[*].

7. As the ſuſceptibility of the living body varies in the manner now mentioned, ſo likewiſe all the powers which are capable of influencing it, may be ſaid, in ſome ſort, to act ſpecifically ; ſince no two of them produce preciſely ſimilar effects. This appears to be equally true of the ordinary healthful agents, and of thoſe which induce or remove diſeaſes.

8. Every medicine poſſeſſes properties more or leſs peculiar to it, which determine its action to ſome particular part or organ, in preference to others. Thus cantharides ſtimulate the bladder and neighbouring parts ; ipecacuanha, the ſtomach ; and aloes, the inteſtines. Spices and the like, that frequently prove ſo ſalutary to the ſtomach, painfully irritate the eye or the ſur-

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[*] *Medicina ars conjecturalis:* this maxim was not more true in the days of Celſus, than it is at preſent ; in ſpite of the boaſted improvements in phyſiology and practice of later times.

face of a wound. Opium, henbane, digitalis, and various other narcotics, whether poiſonous or medicinal, immediately diſturb the functions of the brain and nerves; while the foſſil poiſons, as lead, arſenic, and barytes, excite other parts to morbid action, but exert no direct influence on the brain.

9. A conſiderable variety exiſts even among the individuals of the ſame claſs of medicines. We obſerve, for inſtance, a wide difference between the effects of different purgatives; ſo that one cannot always be ſubſtituted for another in practice, without diſadvantage, though agreeing in their common operation. And the ſame is true of the other claſſes of the *Materia Medica.*

10. This applies alſo to morbific agents, and particularly to *morbid poiſons*, each of which ſeems to have its peculiar ſeat in the body. The variolous poiſon limits its action chiefly to the ſkin, rarely affecting the internal parts; while catarrhal inflammation is excited by the morbillous poiſon; and ſore throat by that of ſcarlatina. Thus, too, the venereal poiſon affects certain bones almoſt excluſively.

11. In like manner, the paſſions of the mind produce effects on the body, each in

a great meaſure peculiar to itſelf. Thus fear produces contraction of the extreme veſſels, and of the muſcular coat of the bladder; while it debilitates the muſcles of voluntary motion, or at leaſt diminiſhes the influence of the will over them. Shame excites the veſſels of the cheeks to unuſual action; and ſo of the reſt.—In a word, although there may be powers which prove ſtimulant to any individual part of the ſyſtem to which they are applied (ſuch, for example, as heat), it may be doubted whether, by any mode of application, they can be made to produce an univerſal and direct effect.

12. A relation ſubſiſts between the different parts of the ſyſtem, in conſequence of which any conſiderable change in the condition of one part, affects, more or leſs, the action of others. This relation, which is termed ſympathy or conſent, cannot be explained by a community of nerves or veſſels between the parts thus influencing each other*, but appears to depend on the brain,

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* The pulmonic plexus which furniſhes the lungs with nerves, has no greater communication with the phrenics, and thoſe that ſupply the intercoſtal muſcles, than with the nerves of the ſtomach, inteſtines, or other abdominal viſcera; nor do thoſe nerves ariſe from the ſame part of the

and its continuation the ſpinal marrow; for theſe being deſtroyed, ſympathy no longer exiſts*.

13. The parts of the body differ greatly from one another, in the readineſs with which they influence, or are influenced by, others; ſome ſympathizing with almoſt every part of the ſyſtem, whilſt others often undergo great changes, without affecting the reſt of the body: as examples of the former, may be mentioned the brain and ſtomach; of the latter, the common cellular membrane, and various glandular parts.

14. The more readily and extenſively any part ſympathizes with the reſt of the ſyſtem, the greater are the number and variety of the ſymptoms which accompany its diſeaſed ſtate.

15. Sympathetic affections have no neceſſary analogy with the actions which pro-

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brain. The ſympathy, therefore, which exiſts ſo remarkably between the lungs and the muſcles of reſpiration, and in conſequence of which any irritation of the former excites the latter to immediate action, does not depend on any direct nervous connection. The ſame is true of the ſenſitive and moving parts of the eye in reſpect of one another, the nerves of which are diſtinct, as well in their origin as their diſtribution. Many other ſimilar inſtances in the ſyſtem might be adduced.

* Whytt's Works, 4to, p. 510.

duced them, but are often of the reverſe kind. Inflammation of the kidney, though it affects the ſtomach, does not excite any thing like inflammation in it.

16. It ſeems to be a general law of the animal œconomy, that the action of one part being preternaturally increaſed, the reſt of the ſyſtem, or particular parts of it, have their natural actions diminiſhed; and *vice verſa.* Thus an increaſe of the ſecretion and periſtaltic motion of the inteſtines, as in diarrhœa, is attended with impaired action of the ſtomach, and torpor of the veſſels of the ſkin; while there is no more certain method of diminiſhing exceſſive action in the alimentary canal, than increaſing the circulation on the ſurface of the body. On the other hand, by reducing the action of the veſſels of the ſkin, as by the moderate application of cold, the functions of the ſtomach are often performed with augmented vigour.

17. An intimate acquaintance with the ſympathies that ſubſiſt between the different parts of the ſyſtem, is of the greateſt importance to the medical practitioner, in enabling him to detect the primary ſeats of diſeaſes; as will be ſeen more particularly hereafter.

## Sect. II.---*Of the Nature of Diſeaſe generally.*

18. AS the ſtate of health conſiſts in the perfect performance of all the functions, ſo every deviation from this may be called diſeaſe: in other words, diſeaſe is a defect or derangement of the natural actions of the animal œconomy.

19. Few modern phyſiologiſts, probably, will heſitate to admit, that diſeaſe conſiſts *eſſentially* in an altered condition of the ſolids of the body, in conſequence of which, ſome one or more of the functions are imperfectly performed, or pain or other uneaſy ſenſation induced. A vitiated ſtate of the fluids, allowing it to exiſt, would conſtitute only a remote cauſe of diſeaſe, by diſturbing the actions and functions of parts; for no one would ſay that diſeaſe was preſent, where theſe continued to be well performed.

20. All the morbid changes which take place in the living body may be referred ultimately to a change in the mode of *acting* of ſome of its parts. The changes in ſenſation which ſo commonly occur in diſeaſes, as pain, torpor, or perverted feeling,

can, in moſt caſes, be eaſily traced to a previous change of action, either in the part itſelf, or in one that is connected with it by nervous communication.

21. The vaſcular ſyſtem, including arteries, veins, and abſorbents, is the principal agent by which all the great changes, natural as well as morbid, that take place in the living body, are brought about. It is at once the inſtrument of ſupply and of waſte to the body, and of energy to the mind. Its regular actions are the ſource of life and health ; its diſorders, the occaſion of diſeaſe and death in a great majority of caſes. There are few diſeaſes, indeed, which may not be traced to the vaſcular ſyſtem, as their ſeat. Inflammation, a diſorder of this ſyſtem, is the *immediate* cauſe of nine in ten of the great and fatal maladies which afflict mankind, and the *indirect* ſource of many others. Moſt of the ſpaſmodic, convulſive, and painful affections ranked by noſologiſts among primary diſeaſes, are, in fact, nothing more than ſecondary or remote effects of diſordered vaſcular action in the brain or other parts of the nervous ſyſtem. The greater number of mental affections are alſo clearly referable to the ſame ſource.

22. Scarcely any part of an animal is

purely paſſive. The nerves and their coats are furniſhed with blood-veſſels, which are, of courſe, endowed with muſcular power, every exertion of which muſt produce a correſponding change in the condition of the nerves, and conſequently influence more or leſs their ſenſibility. In like manner, the brain, though itſelf incapable of motion, is abundantly ſupplied with moving parts, namely, the blood-veſſels, the varying action of which manifeſtly affects both the condition of that organ, and the ſenſibility and mode of acting of the reſt of the ſyſtem.

23. As every organ is compounded of various more ſimple parts (1), each acting in a different manner, and according to laws peculiar to itſelf, it is evident that there may be a very great diverſity in the mode of acting of the entire organ, accordingly as one or more of the component parts deviates in different degrees from the healthy ſtandard. This explains the number of morbid changes in ſtructure which parts are obſerved occaſionally to undergo, and accounts for the almoſt infinite diverſity of diſeaſes, as they affect different perſons, and the ſame perſon at different times.

24. The ſyſtem, while labouring under one diſeaſe, is commonly leſs liable to the

attack of others; hence, diſeaſes are more frequently found ſingle than combined; and one diſeaſe often becomes a remedy for another. Upon this point, much of the practice of phyſic turns; for diſeaſes are more frequently cured or ſuperſeded by exciting other preternatural actions in the ſyſtem, than either by the removal of their cauſes, or by acting immediately on the affected parts themſelves. In this way, chiefly, is to be explained the effect of *emetics*, *purgatives*, *ſudorifics*, *epiſpaſtics*, &c., by which we endeavour to remove ſo many and ſuch various diſorders, without any regard being paid to their remote or proximate cauſes.

25. A diſeaſe may conſiſt merely in morbid *action*, occaſioning derangement of functions, without any perceptible alteration of the ſtructure or organization of the part affected. In ſuch caſes, diſſection after death affords us no inſight into the ſeat or nature of the diſeaſe, as was remarked above. Nor does even a knowledge of diſeaſed ſtructure, as derived from diſſection, *neceſſarily* either point out the nature of the diſeaſed action which occaſioned it, or afford us any certain indications of cure. Morbid anatomy, therefore, is of limited uſe and application in the practice of phyſic.

26. Diſeaſed actions are not always accompanied with ſenſation; hence diſeaſes of parts that lie concealed from view are frequently overlooked. The lungs, the brain, and many other parts, have been found diſorganized after death, where no pain or other direct affection of thoſe organs occurred, during life, that led to ſuſpect the exiſtence of ſuch injury.

27. But although organic affections can not in all caſes be detected by the feelings of the organ itſelf, they are ſometimes diſcoverable by the affection of other parts connected with it by ſympathy. Thus we are enabled to trace many affections of the ſtomach, of the vaſcular ſyſtem, and of other remote parts, to a diſordered ſtate of the brain and its functions. And ſo in many other inſtances.

28. No part can undergo any material alteration, either in its ſtructure or mode of acting, without a correſponding change taking place in its functions. Thus, if it be a ſecretory organ that is affected, the ſecretion will be changed in quantity or quality, and commonly in both reſpects at once: if it be an organ of ſenſe, its ſenſibility will be augmented or impaired, or

otherwiſe perverted. If the brain, the common ſource of ſenſation, voluntary motion, and mental energy, be the part affected, all theſe functions will ſuffer in proportion to the extent and degree of topical diſeaſe. An attention, therefore, to the manner in which the different functions are carried on, is indiſpenſible in the inveſtigation of diſeaſes, and frequently affords a clue to the diſcovery of their particular ſeats in the body.

29. Diſeaſes, as we commonly obſerve them, are by no means ſimple phenomena; but conſiſt of an aſſemblage of various ſymptoms, that differ widely in their nature, and in the order of their occurrence.

30. Symptoms have been differently arranged by authors; as into *primary* and *ſecondary*; and into *proper* and *common*.

31. *Primary ſymptoms* are thoſe which ariſe out of the part or organ originally affected. They have by ſome been called *ſymptomata cauſæ*[*], being ſuppoſed to be the direct and immediate effect of the remote or exciting cauſe. This term, however, ap-

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[*] Home *Principia Medicinæ.*

pears objectionable ; as there may be many intervening changes between the application of the cauſe, and the production of the obvious effects, or ſymptoms. Thus when catarrh is produced by cold applied to the ſurface of the body, the cold is the remote cauſe ; inflammation of the mucous membrane of the reſpiratory paſſages is the diſeaſe (often improperly called the *proximate cauſe) ;* while the cough, pain in the cheſt, and expectoration, are the *primary ſymptoms.* But there are evidently, in this as in other caſes, ſome intermediate changes taking place between the application of the remote cauſe and the diſeaſe, and which we are often unable to trace.

32. *Secondary ſymptoms* are thoſe which ariſe out of the *primary*, of which they are the effect. They have no immediate relation to the exciting cauſe. They have been called *ſymptomata ſymptomatum**, the ſymptoms of ſymptoms ; and of ſuch there may be various gradations ariſing out of one another in ſucceſſion.

33. By the term *proper*, are underſtood thoſe ſymptoms which are peculiar to any

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* Home *Principia Medicinæ.*

particular diſeaſe, and which ſerve to diſtinguiſh it from others. They have been alſo called *pathognomonic* ſymptoms, and correſpond pretty nearly, though not entirely, with the idea affixed to the term *primary*, as noticed above.

34. *Common ſymptoms* are ſuch as may be induced by different diſeaſes. They have no eſſential or peculiar relation to the part primarily affected, but may be produced indifferently by the affection of different parts. Thus, when any organ is attacked by inflammation, the pain felt in the part, and the diſturbance obſerved in its functions, are the *proper ſymptoms* of the diſeaſe; while quickneſs of pulſe and a feveriſh ſtate of body conſtitute the *common ſymptoms* only, as they are obſerved to occur indifferently in the inflammation of various parts.

35. Theſe diſtinctions it is highly neceſſary to keep in view, in all inveſtigations into the ſeats of diſeaſes; for the *ſecondary* and *common* ſymptoms have, in innumerable inſtances, been conſidered as the principal affection, and have been treated accordingly: in none has this happened more frequently, than in the diſeaſe which makes

the ſubject of the preſent Eſſay; as will be ſhewn hereafter.

36. The obvious phenomena of diſeaſes, or their moſt prominent external characters, are oftentimes *ſecondary* or *common ſymptoms* only; and when this is the caſe, they contribute little or nothing, *of themſelves*, towards pointing out the ſeat of the diſeaſe, or the proper method of cure. Thus in jaundice, no one, from merely obſerving the yellowneſs of the ſkin, eyes, and urine, could tell whether the obſtruction of the biliary duct was occaſioned by inflammation of the liver itſelf, tumour of a neighbouring part, concretion of bile, or ſpaſmodic affection of the duodenum; nor, of courſe, could he lay down a rational plan of cure.

37. The ſecondary or common ſymptoms of a diſeaſe are not only often the moſt ſtriking, but frequently the occaſion alſo of the chief part of the diſtreſs which the patient ſuffers; and on this account undoubtedly require conſiderable attention in practice: ſtill it is of great importance to trace the dependence of ſymptoms on one another, and to diſtinguiſh between ſuch as are primary and ſuch as are ſecondary only; for by removing the former, the latter often

diſappear of themſelves, or are eaſily removed afterwards; whereas the removal of the ſecondary effects of diſeaſes not only does not neceſſarily remove the primary, but the attempt to effect it is ſometimes detrimental. Thus in peripneumony of the moſt violent kind, and in inflammation of the ſtomach or ſmall inteſtines, if we were to attend only to the feeble ſtate of the pulſe, and the general proſtration of ſtrength, which are ſo remarkable in theſe affections, we ſhould be tempted to employ remedies that excite the powers of the ſyſtem to greater exertion; but by ſo doing it is manifeſt we ſhould in general aggravate the original diſeaſe.

38. It is not uncommon for the names of diſeaſes, and often the indications of cure, to be taken from their ſecondary ſymptoms, without regard to the original nature of the diſeaſe; from whence much bad practice has reſulted. This will be ſhewn particularly to have been the caſe in fever; and it may be inſtanced, likewiſe, with regard to ſtomach complaints, as want of appetite and indigeſtion, which accompany a great number of diſeaſes of different characters, and that require different treatment; yet the uſe of ſtimulating remedies, under the

title of *tonics* and *ſtomachics*, is almoſt indiſcriminate in ſuch caſes.

39. In order to detect the primary ſeat of a diſeaſe, it is requiſite to attend to the various ſymptoms, the order of their occurrence, and their relation to the different functions, and to one another. We ſhall thus, in moſt inſtances, be enabled to aſſign without difficulty the primary ſeat of diſeaſe, or the organ originally affected. In the preſent ſtate of our knowledge, it will, no doubt, on many occaſions be difficult, and ſometimes impracticable, to refer general ſymptoms to a particular organ, as the ſeat of primary affection; but the attempt ſhould be made, and could not fail to be uſeful: it would neceſſarily lead to a more accurate and attentive obſervation of diſeaſes, the only way, perhaps, in which the ſcience of medicine can with certainty be advanced.

40. The great advantage to be derived from an acquaintance with the primary ſeats of diſeaſes, is our being thereby enabled to adminiſter remedies that are more eſpecially adapted to the particular organ affected, and to make our applications more nearly or directly to the ſeat of miſchief. This

knowledge, likewiſe, tends to prevent the uſe of ſuperfluous and ſometimes of injurious remedies ;—the natural conſequence of buſying ourſelves about ſymptoms, the removal of which has either no influence on the original diſeaſe, or is only to be accompliſhed by means that are detrimental to it. The treatment of ſecondary ſymptoms is in general merely palliative ; while primary ſymptoms are ſeldom to be removed, but by the removal of the diſeaſe itſelf: in the latter caſe, the cure is radical, and ſhould always be attempted, where it can be done with a rational proſpect of ſucceſs.

## Sect. III.---*Of the Common Diviſion of Diſeaſes into Univerſal and Local.*

41. DISEASES have commonly been divided by authors into two principal claſſes, *univerſal* and *local;* the former comprehending ſuch as affect the whole ſyſtem; the latter, certain parts only, the reſt continuing to perform their functions as in health. I think it may be ſhewn, that there is no proper foundation for this diſtinction; that, ſtrictly ſpeaking, all diſeaſes are in their origin local, or affections of ſome particular parts or organs, and never of the entire ſyſtem.

This might be inferred, indeed, *a priori*, from what has been already ſaid. For when it is conſidered, that every part of the ſyſtem is endowed with a peculiar kind of ſuſceptibility, rendering it liable to be influenced by certain cauſes only (5); that an increaſe or diminution of action in one part generally induces a contrary mode of acting in others (16); and, laſtly, that the cauſes exciting diſeaſe, all of them, produce peculiar or ſpecific effects (10); it might naturally be expected that diſeaſes would always be partial or local at their commencement. And this concluſion will be confirmed, I apprehend, by an attentive obſervation of diſeaſes themſelves.

42. It is, no doubt, true that, in the progreſs of many diſorders, a great number of functions come to be deranged, and at times ſcarcely any ſeem to go on preciſely as in health. This is particularly obſerved to be the caſe in certain fevers of the malignant kind; but it occurs as well in diſeaſes that are confeſſedly of local origin. Thus inflammations of the brain, ſtomach, and ſome other important organs, occaſion great general diſorder in the ſyſtem, but are nevertheleſs conſidered as topical affections, and treated accordingly.

43. A diſeaſe can only, in ſtrictneſs, be termed general or univerſal, when it affects every part of the ſyſtem at once. But there are evidently none ſuch. The whole ſyſtem may, indeed, be weakened, and all its actions be conſequently diminiſhed, as by loſs of blood; but ſuch a ſtate, if it affect all parts equally, is not diſeaſe, though it perhaps ſtrongly prediſpoſes to it. Something more is wanted, to conſtitute morbid action. Under ſuch a ſtate of general weakneſs, the functions may continue to be

carried on, though leſs vigorouſly than before; and until one or more of theſe become deranged or interrupted, or until ſome uneaſy ſenſation is induced, diſeaſe can hardly be ſaid to exiſt.

44. With regard to the oppoſite condition of the ſyſtem, namely, general exceſs, either of ſtrength or action, the exiſtence of ſuch a ſtate may, I think, be doubted. In what is termed the *inflammatory diatheſis*, as obſerved to accompany certain topical inflammations, the whole vaſcular ſyſtem appears to be acting in exceſs; but it is not the ſame in reſpect to other organs. The voluntary power is in ſuch caſes obſerved to be greatly diminiſhed, and many of the functions are found to be nearly at a ſtand. The ſtate of the ſyſtem in mania has been adduced as an inſtance of general exceſs of action: but even in this caſe, although the voluntary power, the ſenſibility, and even the mental energy as far as regards perception, appear to be preternaturally increaſed; there are ſtill many other functions, leſs immediately depending on the brain, that are obſerved to be in a torpid ſtate. Thus digeſtion and aſſimilation, and many of the ſecretions and excretions, are very imperfectly performed in mania: and with regard to the mind, although the powers of

perception are apparently enhanced, the more important operations of memory and judgment, which require perhaps greater mental exertion, are impaired or totally annihilated.

45. If the diſeaſes termed *univerſal* by authors be attentively examined, they will be found in general not to merit this title in the ſtrict ſenſe of the word, but to be moſt of them without difficulty referable to a primary affection of ſome one particular organ.

Thus, if we take the beſt claſſification of diſeaſes, perhaps, that has been offered, that of Dr. Cullen (and this is imperfect enough), and examine his firſt claſs, the PYREXIÆ, we ſhall find that three out of the five *orders*, namely, the *phlegmaſiæ* or inflammations, the *hæmorrhagiæ*, and the *profluvia*, are eſſentially local affections, as they are often preſent without any general diſorder of the ſyſtem. Sometimes, indeed, a febrile ſtate of the ſyſtem appears to precede theſe local affections, often for ſeveral days; but theſe caſes are to be conſidered either as complications of proper fever with topical inflammation, or of a converſion of the former into the latter. Such combinations are very common, and will be conſidered fully hereafter. With regard to the remaining *orders* of the PYREXIÆ, the *febres* and *exanthemata*, it will be my buſineſs hereafter to ſhew that they form no real exception to the general rule above ſuggeſted.

Of the ſecond claſs, the NEUROSES or nervous diſorders, the orders *comata* and *veſaniæ* are evidently to be referred originally to a morbid condition of the brain, or its continuation the ſpinal marrow; as are moſt of the order of *ſpaſms*, as *tetanus*, *convulſio*, *chorea*, *raphania*, and epilepſy. Others have the organs of reſpiration for their ſeat, as *aſthma* and dyſpnœa; others, the ſtomach and alimentary canal, as *pyroſis*, *cholera*, colic, and *diarrhœa*. The *adynamiæ*, or diminiſhed involuntary motions, are all, likewiſe, referable to a morbid condition of particular organs, as *ſyncope* to the heart or brain, *dyſpepſia* (when a primary affection) to the ſtomach, and *chloroſis*, perhaps, to the womb.

The third claſs of the ſame writer, the *cachexiæ*, or general depraved habit of body, is a relic of the humoral pathology, and includes no diſeaſes that are not ſtrictly local in their effects. The firſt *order*, *marcores*, or general emaciation, is not a diſeaſe in itſelf, but the conſequence of ſeveral, and thoſe of very different kinds. The *intumeſcentiæ* are all more or leſs partial in their extent. The *impetigines* are ſtrictly cutaneous affections, however general the diffuſion of the occaſional cauſe: *icterus*, improperly placed among theſe, is a remote ſymptom only of a well known topical diſeaſe.

The fourth claſs of Cullen, the LOCALES, confeſſedly topical, are yet ſcarcely more ſo than the individuals of the other claſſes: the only difference is, that the ſubjects of the laſt claſs are primary diſeaſes, while the former are moſtly ſecondary affections, or mere ſymptoms, that have been conſidered independent of their cauſe.

Neither Linnæus, Vogel, nor Sagar, profeſſedly diſtinguiſh diſeaſes into *univerſal* and *local*. Macbride, indeed, makes a claſs of *univerſal* diſeaſes; but he employs the term with great latitude, including in it thoſe diſeaſes which are common to all ages and to both the ſexes, and likewiſe thoſe topical diſeaſes where the general affection ſo predominates over the local ſymptoms, as to conſtitute the chief part of the patient's diſtreſs.

46. The caſe in which, above all others, a general diſeaſe might be moſt naturally ex-

pected to ariſe, is where there is a vitiated or contaminated ſtate of the fluids; for the noxious cauſe in this caſe being, by means of the circulation, applied to every part, ſhould derange the functions of the whole ſyſtem. Yet experience ſhews, that, even here, topical and not general diſeaſe is the conſequence; as when the venereal poiſon is abſorbed and carried into the blood-veſſels. This, however, is no more than ought to happen, according to the laws of ſuſceptibility above laid down.

47. From what has been ſaid, therefore, it may be concluded that, properly ſpeaking, there is no ſuch thing as an univerſal diſeaſe; that is, one in which all parts of the ſyſtem are immediately diſturbed by the agency of the exciting cauſe; and that in all diſeaſes, however diverſified and extenſive they become during their courſe, ſome one part or organ is always firſt affected, while others ſuffer in a ſecondary way only, by their connection with this, or with one another.

48. This may, perhaps, to ſome, ſeem too obvious to need inſiſting upon: no one doubts, it may be ſaid, that the ſymptoms of diſeaſes often ariſe out of one another,

and do not all equally and immediately depend upon the exciting cauſe. However this be, it is certain that, in practice, a great number of diſeaſes are ſtill conſidered and treated as univerſal, or as diſeaſes of the general ſyſtem, which, in all probability, owe their exiſtence to ſome primary topical affection. This I take to be the caſe, not only with regard to fevers, but the whole tribe of *nervous* diſorders, as they are unmeaningly termed, which make up ſo large a part of the phyſician's practice. In few of theſe has any preciſe and determinate ſeat of morbid affection been ſatisfactorily aſſigned. In moſt of them, ſecondary ſymptoms only have given name to the diſeaſe, and furniſhed the indications of cure. But it has been already ſhewn that indications ariſing from this ſource are often fallacious, and not to be relied upon.

49. A new and very extenſive claſs of general diſeaſes has been of late held forth, under the title of *aſthenic* diſeaſes, or diſeaſes of debility; this having been ſuppoſed to conſtitute their proximate cauſe or eſſence, and the removal of which has been the chief aim of the practitioner. It is, however, certain, I think, that debility, though it may give a prediſpoſition to diſ-

eaſe, is of itſelf rarely, if ever, either the proximate or the occaſional cauſe. It accompanies, indeed, the greater number of diſeaſes, and thoſe of the moſt oppoſite characters; but it is obviouſly in general an effect only, and indicates nothing certain in regard to the cure. There is no doubt that the making it a primary object of conſideration in practice, ſo much as has been done of late, has been productive of much miſchief. General weakneſs is not always capable of being remedied by ſtimulant and tonic remedies, nor by the uſe of rich and nutritious food; but often, indeed, by means the reverſe of theſe, when ſuch means are calculated to relieve or take off the original diſeaſe; as is not unfrequently the caſe. Nothing is more common than to obſerve, in topical inflammations, the action of the heart and arteries becoming ſtronger after bloodletting, and the voluntary power at the ſame time increaſed. In ſuch caſes, bloodletting, by relieving the original diſeaſe, which had depreſſed the powers of the ſyſtem, becomes in reality a ſtrengthening remedy. On the other hand, it is no leſs certain, that the uſe of ſtimulating, or, as they are falſely called, *ſtrengthening* remedies, by increaſing the topical affection, often tends to depreſs the energy of the ſyſtem ſtill further, inſtead of rouſing it*.

50. There ſeems, therefore, to be a real neceſſity for making the diſtinction mentioned, between general and topical affections; that we may not, in practice, be employed merely in the palliation of ſymptoms, but in endeavouring to remove their cauſes, wherever this is practicable. There are ſtill, no doubt, a number of morbid affections, which we are unable to refer to their proper and primary ſeat in the body; theſe ought, in the preſent ſtate of our knowledge, to be conſidered as anomalous, and as ſerving to mark the imperfec-

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* I ſhall take this opportunity of remarking, that the doctrine which ſuppoſes almoſt all diſeaſes to be univerſal, and the whole ſyſtem to be acting in a ſimilar manner, either in exceſs, or the reverſe, owes any popularity it may have chanced to poſſeſs, more to its apparent ſimplicity, than to its conſonance with truth and the laws of the animal œconomy. In diarrhœa and dyſentery, which occupy a conſpicuous place in the catalogue of *aſthenic* diſeaſes, the part affected and the general ſyſtem are often in the oppoſite ſtate of action, in regard to one another. The ſyſtem is weak;—the inteſtines have all their actions preternaturally increaſed. This is ſeen in their augmented ſenſibility and conſequent pain; in the exceſſive ſecretions poured out into their cavity; and in their increaſed periſtaltic motion: theſe ſurely cannot be conſequences of local debility or a weaker action of parts. The ſame contraſt might be ſhewn to exiſt in a great number of other diſeaſes, between the general ſyſtem and the ſeat of topical affection.

tion of medical ſcience. As this is improved, and obſervation becomes more accurate, the number of ſuch anomalous affections may be expected to diminiſh. That this would be followed by beneficial conſequences in practice, might be looked for with confidence. If we are incapable of diſcovering the intimate nature or rudiments of diſeaſes (4), it is ſomething at leaſt to know their proper ſeats in the body: our efforts to relieve them, by being more pointedly directed, will be more likely to be crowned with ſucceſs. The old doctrine of *revulſion* taught us to attempt the relief of topical affections by applications to parts the moſt remote from the ſeat of diſeaſe: and this, doubtleſs, has ſometimes its advantages. Obſervation, however, has evinced that, in many caſes, we can more effectually combat diſeaſes, by attacking them at their ſource: to aſcertain this, therefore, with certainty, is a matter of no ſmall moment. Such an inquiry naturally precedes any inveſtigation of the nature of diſeaſes, and muſt be ſubſervient to it; for without knowing the ſeat of a diſeaſe, or the organ primarily affected, it is ſcarcely conceivable that we ſhould become intimately acquainted with its nature, or the beſt poſſible means of removing it.

# CHAP. II.

## OF THE PRIMARY SEAT OF FEVER IN THE BODY.

THERE is, perhaps, no diſeaſe that excites ſuch general diſturbance in the ſyſtem, or deranges ſo many of its functions, as fever properly ſo called; hence its ſymptoms are numerous and complicated, and not eaſily, in appearance, reducible to any certain order. It is little to be wondered at, therefore, that it ſhould in general have been conſidered as an univerſal diſeaſe, affecting eſſentially, at once or in ſucceſſion, every part of the ſyſtem. This opinion of the nature of fever has been entertained in all ages, with very few exceptions; it has been inſiſted on by the lateſt and beſt writers on the ſubject; and is inculcated, I believe, by the moſt eminent teachers of the preſent day.

But I have endeavoured to ſhew in the preceding pages, that neither this, nor any other diſeaſe, is juſtly entitled to the denomination of general or univerſal. With regard to fever, however numerous and diverſified its ſymptoms are at times obſerved to be, it will be found, on attentive examination, that few of theſe are *eſſential*, or belong to it excluſively, but are the greater part of them *ſecondary* ſymptoms only, and common to various other diſeaſes; or caſual, and of uncertain occurrence; depending not immediately upon the original and exciting cauſe, but ariſing out of ſome previous ſymptom, and many of them altogether the effect of adventitious circumſtances, as climate, ſeaſon, regimen, and the particular ſtate and habit of body of the patient himſelf.

In attempting to aſſign the primary ſeat of fever, it will be neceſſary to examine the various phenomena of the diſeaſe, to trace their order of occurrence, and their dependence on one another and on the exciting cauſes. We ſhall thus, if I miſtake not, diſcover the brain to be the true ſeat of morbid affection in fever, and the ſource of all the ſymptoms which eſſentially belong to it, and which ſerve to diſtinguiſh it from other diſeaſes. This opinion will be confirmed by the conſideration of the remote cauſes that induce fever, and of the particular circumſtances which ſeem to prediſpoſe to it.

By the term fever is at preſent to be underſtood, that which has been ſtrictly ſo called, the *idiopathic* fever of authors; excluding that general febrile ſtate which accompanies the topical inflammation of various parts, and which is known by the name of *ſymptomatic* fever. This is confeſſedly a ſecondary affection only, and will be further conſidered hereafter.

## Sect. I.---*Of the Phenomena of Fever generally, as indicating its Seat.*

IN every proper fever, many of the moſt important functions of the body are obſerved to be conſiderably deranged. This derangement, however, is not uniform in every part, but different in kind in different organs, and in the ſame organ at different times. Thus, the actions which are deſtined to ſupport and nouriſh the body in health, as the digeſtive and aſſimilatory functions, nearly ceaſe altogether; whilſt, on the other hand, the abſorbents in general, and the excretory veſſels on the ſurface, appear to act with increaſed energy during a great part of the diſeaſe: hence, towards the end of fevers of any long duration, the body is found in a ſtate of extreme emaciation. Other functions are often carried on in fever with little change. Thus, in many inſtances, the general vaſcular ſyſtem, the kidneys, the liver, and the inteſtinal canal, continue to perform their ordinary functions nearly as in health: at other times, one or more of them are greatly diſordered.

But although the phenomena of fever appear at firſt view thus various and complicated, and ſcarcely admitting of arrangement, they will be found, when attentively examined, to obſerve a certain and determinate ſeries and order, a careful attention to which will enable us, I apprehend, to aſſign the true and original ſeat of morbid affection. It is the want of a ſufficient diſcrimination between the primary eſſential ſymptoms, and thoſe which are acceſſory, and of occaſional occurrence only, that has given birth to moſt of the ill founded theories which have heretofore prevailed on this ſubject. Thoſe who conſidered morbid exceſs of heat, putreſcency of the fluids, bile in the ſtomach and bowels, ſpaſm, debility, &c., as conſtituting the eſſential part of fever, appear to me to have fallen into this error.

The following may be given as the ſeries of ſymptoms particularly denoting the attack and preſence of fever in the ſyſtem; it is furniſhed by an author of very extenſive experience, and of acknowledged accuracy*: I may add, that it coincides with the hiſtory of the diſeaſe, as handed down to us by the beſt writers of all ages, and is confirmed by daily obſervation. The author alluded to having ſtudiouſly avoided giving any theory reſpecting the nature or proximate cauſe of fever, and admitting none*, his obſervations are free from all ſuſpicion of bias on this ſcore: the phenomena here mentioned may be juſtly conſidered, therefore, as the diagnoſtic or pathognomonic ſymptoms of the diſeaſe in general. The acceſſory ſymptoms which occaſion the varieties obſerved in fever will be treated of more particularly afterwards.

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* Vide *Elements of the Practice of Phyſic, by* George Fordyce, *M.D.* 8vo.

*Firſt ſtage.* The attack of fever, whenever it can be diſtinctly obſerved, is conſtantly announced by the following ſymptoms, in greater or leſs degree.

"*(a) Languor*, wearineſs, weakneſs, inſenſibility of the extremities: *blindneſs* and *inſenſibility* in the other organs of ſenſation; cold and trembling; pain in the back.

"*(b) Horripilatio;* the ſkin pale, dry, and of a duſky colour; a dry, foul tongue, and thirſt; tranſparent urine; coſtiveneſs; and ſuppreſſion of other ſecretions; paleneſs and dryneſs in ulcers; a ſmall obſtructed pulſe, ſometimes intermitting; pain in the limbs, joints, and *forehead; delirium.*

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* "What the real derangement in the ſyſtem is which produces the external appearances in fever is not at all known; it is a diſeaſe, the eſſence of which is not underſtood."—*Diſſ. on Fever*, No. 1, p. 118.

"*(c)* Anxiety; oppreſſion and ſwelling about the præcordia; frequency of the pulſe; quick and laborious reſpiration, ſometimes with a cough; rigor, and horror; thirſt, flatulency, loſs of appetite, *nauſea*, and vomiting."

Theſe are the ſymptoms which conſtitute the firſt ſtage of fever, and are properly characteriſtic of it: "according to the violence of theſe ſymptoms at any time of the diſeaſe, the fever is violent; and when they are entirely carried off, it is cured*."

*Second ſtage.* The ſymptoms of the *firſt ſtage*, above enumerated, ſoon give place to thoſe of the *ſecond ſtage*, which ſucceed each other in the following order. “ Rigor and horror ; heat riſing from the præcordia, and diffuſed over the body irregularly, unequally, and with fluſhing ; a ſtrong, full, *obſtructed** pulſe ; or a very frequent, ſmall one ; *pain in the head* and joints ; *ſtupor* and *delirium ;* univerſal ſoreneſs ; redneſs ariſing in different parts irregularly ; the urine high coloured, but tranſparent ; ſweating in the head and breaſt, or over the whole body ; partial ſecretions.

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* This deſcription is borrowed, on account of its conciſeneſs, from Dr. Fordyce's earlier treatiſe on the ſubject *(Elements of the Practice of Phyſic)*: it correſponds, however, entirely with the more detailed hiſtory given in the elaborate *Diſſertations on Fever* which terminated the profeſſional career of this excellent phyſician.

“ At laſt the pulſe becomes free ; all the ſecretory organs are relaxed : hence the ſkin grows ſoft and moiſt, and returns to its natural colour ; the tongue likewiſe is ſoft and moiſt, the belly is open, and the urine in greater quantity: if tranſparent when diſcharged, after a little time it becomes turbid and opaque, and at laſt depoſites a copious ſediment: the ſecretions are often greatly increaſed; there ariſes a copious and univerſal ſweat, or a purging, or great flow of urine.

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* It is not eaſy to underſtand the import of the term *obſtructed*, as here employed. It was no doubt intended to expreſs a peculiar ſtate of the pulſe very perceptible to the author himſelf, but it conveys no preciſe meaning to the reader. This may have ariſen from the poverty of language, which is inadequate to communicate to others an idea of innumerable ſenſations that we ourſelves perceive with great diſtinctneſs. This is the caſe with regard to the pulſe in fever, which has certainly a peculiar *feel*, but which it is very difficult to deſcribe in words. To my mind, the pulſe of a patient labouring under fever conveys diſtinctly the idea of a fluid moving under the finger ; a ſenſation that is not excited by the pulſe in health, and which is probably owing to a tremulous unſteady motion in the coats of the artery, ariſing from a change in the ſtate of its irritability.

"The frequency of the pulſe, and all the other ſymptoms of the firſt and ſecond ſtage gradually ſubſiding, the patient recovers his health, but is conſiderably weakened. Or there ariſes an inflammation or hæmorrhage in ſome part of the body, the ſymptoms of the firſt ſtage ſuddenly diſappearing, or being greatly diminiſhed."

That the deſcription now given includes the primary and eſſential ſymptoms of fever in general, and not of any particular ſpecies merely, will appear from an examination of the diſeaſe as it occurs in different climates and ſeaſons, according to the obſervation of writers of the beſt credit.

The attack of the *ſlow nervous fever*, the *typhus mitior* of modern noſologiſts, is thus deſcribed by Huxham. "The patient at firſt grows ſomewhat liſtleſs, and feels ſlight chills and ſhudders, with uncertain ſudden fluſhes of heat, and a kind of weарineſs all over, like what is felt after great fatigue: this is always attended with a ſort of heavineſs and dejection of ſpirits, and more or leſs of a load, *pain*, and *giddineſs of the head;* a *nauſea* and diſreliſh of every thing ſoon follows, without any conſiderable thirſt, but frequently with urging to vomit, though little but inſipid phlegm is brought up. Though a kind of lucid interval of ſeveral hours ſometimes intervenes, yet the ſymptoms return with aggravation, eſpecially towards night: the *head grows more heavy or giddy*, the heats greater, the pulſe quicker, but weak, with an oppreſſive kind of breathing. A great torpor, or an obtuſe kind of coldneſs, affects the hind part of the head frequently, and oftentimes a heavy pain is felt on the top all along the coronary ſuture: this, and that of the back part of the head, generally attend nervous fevers, and are commonly ſucceeded by ſome degree of a *delirium**."

The firſt ſymptoms of *putrid*, *malignant*, and *petechial* fevers, are thus deſcribed by the ſame author. "In general theſe fevers attack with much more violence than the *ſlow nervous;* the rigors, if any, are greater

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* Eſſay on Fevers, chap. 7.

(ſometimes they are very great), the heats much ſharper and permanent, yet at firſt ſudden, tranſient, and remittent; the pulſe more tenſe or hard, but commonly quick and ſmall, though ſometimes ſlow and ſeemingly regular for a time, and then fluttering and unequal. The *headach*, *giddineſs*, *nauſea*, and vomiting, are much more conſiderable, even from the very beginning. Sometimes a ſevere fixed *pain* is felt in *one or both temples*, or over one or both eyebrows, frequently in the *bottom of the orbits of the eyes*. The eyes always appear very full, heavy, yellowiſh, and very often a *little inflamed*. The countenance ſeems more bloated and dead-coloured than uſual. Commonly, the *temporal arteries throb much*, and a *tinnitus aurium* is very troubleſome. A *ſtrong vibration alſo of the carotid arteries* comes on frequently in the advance of the fever, though the *pulſe at the wriſt may be ſmall*, nay even ſlow. The *proſtration* of ſpirits, weakneſs, and faintneſs, are often ſurprizingly great and ſudden, though no inordinate evacuation happens; and this, too, ſometimes when the pulſe ſeems tolerably ſtrong*."

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* Eſſay on Fevers, chap. 8.

The following are given by Dr. Lind, as the leading ſymptoms of a fever which occurred on board a ſhip of war, during the rainy ſeaſon, at Gambia on the coaſt of Africa, in the year 1769. "In the mildeſt form," ſays he, "it began with a *head-* "*ach*, a ſickneſs at the ſtomach, thirſt, uni- "verſal uneaſineſs and pain, eſpecially in "the back and loins. The pulſe was ſmall "and quick, the ſkin hot and dry. In the "morning, theſe complaints were greatly "relieved, in the evening exaſperated; "which happened through the whole "courſe of the fever."—"In the more "malignant form of the fever, all the "ſymptoms were more violent; there was "from the beginning a great *proſtration* "*of ſtrength and ſpirits*, univerſal unea- "ſineſs, *giddineſs*, violent retchings, a "ſtrong, quick, and ſometimes a hard "pulſe, a white and dry tongue; ſometimes "a ſevere purging with gripes; at other "times a bad cough, a *violent pain and* "*ſtricture over the eyes*, and coſtiveneſs*."

In the province of Bengal in the Eaſt Indies, fevers are obſerved to make their attack in the following manner. "Impetus morbi plerum-

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* Lind on Hot Climates, p. 55-56.

"queſubitaneus eſt, et incipit ſenſu debilitatis, ac ingenti ſpirituum proſtratione; accedunt frigiditas modo major modo minor, *vertigo*, nauſea, *capitis* et *lumborum* acerrimi dolores, *manuumque tremores;* vultus eſt pallidus, cutis vulgo arida et conſtricta, oculi languidi ac graves, celer at exilis pulſus, anhelitus plerumque difficilis et ſingultibus interceptus."—"Remittente febre, pulſus ferè ad naturalem conditionem redit; manent tamen *capitis* atque *lumborum dolores*, licet leviores, ut et ſapor oris ingratus, et proſtratus appetitus*."

The endemic of Batavia is well known to be a fever of the moſt deſtructive nature. "This fever," ſays the author before quoted, "was of the remitting kind. Some were ſeized ſuddenly with a *delirium*, and died in the firſt fit; ſome ſurvived the attack of a third fit†."

The ſymptoms that accompany the attack of yellow fever in the Weſt Indies are ſo much the ſame with thoſe above deſcribed, that it would be a mere repetition to quote

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* *Lind* Diſſ. Inaug. de Feb. Putrid. in Bengalia, 1762.

† Lind on Hot Climates, p. 90.

them. Nor, in autumnal fevers as they occur in Europe, is there any eſſential variation from thoſe already deſcribed. The fever which proved ſo deſtructive at Cadiz, in September and October 1764, and of which an hundred perſons often died in a day, attacked in the following manner.
“ It began commonly with alternate ſlight
“ chills and heats, nauſea, *pains of the*
“ *head*, of the back, of the loins, and at
“ the pit of the ſtomach. Theſe ſymptoms
“ were often followed, in leſs than twenty-
“ four hours, with violent retchings, and
“ a vomiting of a green or yellow bile, the
“ ſmell of which was very offenſive. Some
“ threw up an humour black as ink, and
“ died ſoon after in violent convulſions, and
“ in a cold ſweat. The pulſe was ſometimes
“ ſunk, ſometimes quick, often varying.
“ After the firſt day, the ſurface of the
“ body was generally either cold, or dry
“ and parched. The *headach* and *ſtupor*
“ often ended in a *furious delirium*, which
“ proved quickly fatal*.”

Mr. Dewar (an army ſurgeon), deſcribing the fever which prevailed among the Britiſh troops at Minorca, in July 1800, ſays, “ For a whole week, ſixteen men on an average were taken ill each day. Their complaints, for the moſt part, came on ſuddenly, and very often when they were on the parade. After ſlight languor and debility, the patient was all at once ſeized with *violent headach*, *giddineſs*, pains, and *extreme debility* in the lower extremities, rendering him totally unable either to ſtand or walk. When he was brought to the hoſpital, we found him labouring under all the ſymptoms of the moſt violent pyrexia, increaſed heat, quick pulſe, and urgent thirſt. Two or three of them had frequently alternations of heat and cold; but in all the reſt the preternatural heat of the ſkin was conſtant, and the patients' feelings uniformly hot and oppreſſive. *The ſymptom of which they all moſt violently complained, was the excruciating headach.*” He adds juſt afterwards, “ the headach is attended with an *external heat much greater in the head* than over the reſt of the body, *indicating* a peculiar force of *increaſed action in that part of the ſyſtem*[*].” The fever above deſcribed was not peculiar to any particular claſs of perſons, but prevailed generally among the troops, and alſo the natives of the iſland.

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* Lind on Hot Climates, p. 122.

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[*] Med. and Phyſ. Jour., No. 59.

In the *plague*, the moſt violent and malignant of fevers, the firſt ſymptoms are of the ſame general nature. "The ſymptoms of the plague vary," ſays *De Mertens*, "according to the different conſtitutions of the perſons whom it attacks, and the ſeaſon of the year in which it appears. Sometimes it wears the maſk of other diſeaſes; but in general it is uſhered in by *headach*, *ſtupor reſembling intoxication*, ſhiverings, depreſſion of ſpirits, and *loſs of ſtrength*; theſe are followed by ſome degree of fever, together with nauſea and vomiting. The *eyes become red*, the countenance melancholy, and the tongue white and foul*."—The deſcriptions of the plague afforded by other authors, coincide very exactly with that now given.

An examination of other hiſtories of the diſeaſe would concur with the above in ſhewing, that fevers of all deſcriptions, from the low, nervous fever, to the plague itſelf, are characterized by the ſame eſſential ſymptoms, differing only in degree. Theſe ſymptoms may all, as it appears to me, be referred without difficulty to a topical morbid affection of the brain, as their ſource; as will be ſeen by tracing their relation to the particular functions of this organ.

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* Account of the Plague which raged at Moſcow in 1771, by Charles De Mertens, M.D. Engliſh edition.

Although the brain exerts more or leſs influence on every part of the ſyſtem, yet there is a manifeſt difference in this reſpect with regard to different functions. The actions of the heart and general vaſcular ſyſtem are, in a certain degree, independent of the brain; as is ſhewn by their going on, often, with little variation, in caſes where great and ſerious injuries have been inflicted on that organ by external violence; and by certain topical diſeaſes of the brain, where the pulſe ſometimes varies little from the healthy ſtandard, though the patient be at the time in extreme danger. The ſame is true, in ſome meaſure, of the inteſtinal canal, and, indeed, of all the functions that are immediately ſubſervient to the exiſtence of animal life, and which, by way of diſtinction, have been termed the primary, organic, or vital functions. On the other hand, the ſecondary or *animal* functions; thoſe which connect man with the external world; which raiſe him from the ſimple ſcale of vegetable exiſtence to the rank of an intellectual being and a free agent, to wit, the *ſenſitive*, *locomotive*, and *mental* powers, are ſubjected more immediately to the influence of the brain or common ſenſory.

The independence of the *ſimple* or *organic* functions on the brain, appears to be provided for by a peculiarity of ſtructure. A great many of the organs ſerving for the ſupport of *ſimple life*, receive very few, or ſcarcely any, of their nerves immediately from the brain; but are ſupplied from ganglions, which to them, probably, are as brains, ſerving for the accumulation and ſupply of nervous energy. This is the caſe with the kidneys, pancreas, ſpleen, inteſtines, &c. &c. In the organs of *animal life*, on the other hand, which immediately derive their energy from the brain, there are commonly found two ſets of nerves; one ariſing from ganglions for the ſupport of ſimple life in them; the other coming directly from the brain itſelf, for the *animal life*, or life of relation. Thus, in the eye, the ciliary nerves originate in the ophthalmic ganglion; the optic, in the brain itſelf: thus, too, the noſe receives nerves from the ganglion of *Meckel*, in addition to the proper olfactory nerves. The viſcera in general derive their nerves from the *great intercoſtal*, a nerve that cannot ſo properly be ſaid to ariſe from the brain, as from numerous ganglions, which appear to be the centers of *organic* or *ſimple life*, as the brain is of the *animal life*, or *life of relation*.

The independence, *to a certain extent*, of the heart on the brain, is proved alſo by the galvanic ſtimulus. A late excellent French phyſiologiſt obſerves, that he had repeated opportunities of aſcertaining this, by experiments made on the bodies of perſons who had ſuffered by the guillotine, thirty or forty minutes before. He could never diſcover, he ſays, in theſe caſes, the leaſt movement in the heart, when this and the ſpinal marrow, properly armed, were made to communicate; nor by eſtabliſhing a communication between it and the nerves which it receives, either from the ganglions by the *ſympathetic*, or from the brain by the *par vagum*. Yet in all the experiments the other muſcles contracted regularly by the galvanic ſtimulus; as did the heart itſelf, when mechanically injured*.

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* Traite ſur la Vie et la Mort, par *Xavier Bichat*, cap. 10.—How well other important functions in the ſyſtem can go on, where thoſe of the brain are almoſt annihilated, I have lately witneſſed with ſurprize, in the caſe of an old

man, near ſeventy years of age, who has been long paralytic, ſo as to have loſt the power of articulation, and with it the beſt part of the mental faculties. This perſon has been in the habit of getting drunk once or oftener daily, for the laſt ten or a dozen years, and has met with innumerable accidents in conſequence, as bruiſes, cuts, and burns, which have all got well as readily as in the youngeſt and moſt healthy boy. His laſt misfortune from this ſource was of a more ſerious kind: he fell, while ſitting by the fire, with his hand between the bars, and lay thus without the power of extricating himſelf, and apparently without experiencing pain, till the fingers were in a manner roaſted, or rather burnt. Inflammation, of courſe, followed, but in a degree far below what was to have been expected; while the ſyſtem at large ſeemed not in the leaſt to feel the ſhock. No febrile ſymptom followed, nor was the appetite for food for a moment loſt. The tops of the fingers gangrened, and ſloughed off at the joint; granulations ſprung up, of the moſt florid and healthy kind; and the ſores healed with more rapidity than I have ever obſerved on any other occaſion.

## Sect. II.---*Of the State of the* ANIMAL FUNCTIONS *in Fever.*

IT is in the *animal functions* which are immediately in dependence upon the brain, namely, the external ſenſes, the voluntary, and the intellectual powers, that the proper diagnoſtic ſymptoms of fever are to be found; for throughout its whole courſe, from the firſt attack to the completion of the criſis, this claſs of functions is invariably obſerved to be imperfectly performed, or in ſome degree perverted from the natural and healthy ſtate.

The organs of ſenſe are always preternaturally affected in fever. In the mild form of the diſeaſe, the *low nervous fever*, or *typhus mitior* of noſologiſts, a degree of torpor and inſenſibility frequently involves all the ſenſes. "Omnes corporis ſenſus," ſays Huxham, "maxime depravantur; vix ægri "vident oculis apertis; perditur olfactus, "perditur auditus, vix etiam ſapidiſſima "guſtant; torpent adeo membra, ut parum "admodum ſentiſcant vel acerrima veſica-

"toria; *obſtrucio nimirùm ſenſationis medio*[*]."

It is more common, however, for the organs of ſenſe to be deranged in the contrary way, eſpecially in the early ſtages of the diſeaſe. Light and ſound are generally intolerable to the patient in the beginning of fever[†]. The ſenſes of ſmell and taſte alſo become preternaturally acute, and probably perverted; ſo that nauſea and vomiting are excited by odours and flavours which were ſcarcely perceptible in the ſtate of health, or which even uſed to be perceived with pleaſure: the patient loaths food and drinks that are at other times the moſt agreeable to him. The ſenſe of touch becomes equally exalted; hence the univerſal pains which torment the ſick, and which render him ſcarcely able to bear the weight of his body in bed. Towards the decline of the diſeaſe, torpor again uſually ſucceeds to this ſtate of excitement. Dulneſs of hearing is then particularly remarked, and frequently denotes a favourable iſſue. The acuteneſs of the other ſenſes at the ſame time commonly diſappears.

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[*] Huxham *De Febre lenta Nervoſa*, p. 154, 8vo.
[†] Fordyce's *Diſſertation on Fever*, No. 1, p. 2.

This derangement of the organs of ſenſe in fevers ſtrongly indicates an affection of the ſenſorium, on which they ſo immediately depend for the due performance of their ſeveral functions. Nor is the opinion in any degree diſproved by the varying condition of the ſenſibility in fever, as above noticed; while this circumſtance is quite inexplicable on any of the other hypotheſes that have been given reſpecting the nature of the diſeaſe.

With regard to the voluntary power, every hiſtory of genuine fever, of whatever ſpecies, ſhews this function to be greatly impaired. Proſtration of ſtrength is one of the few ſymptoms which ſeem particularly to characterize fever, and to adhere to it in all its ſtages. To this are to be referred the languor, laſſitude, and indiſpoſition to motion, which are ſo remarkable at the firſt attack of fever, and which continue, in greater or leſs degree, throughout its courſe. Its dependence on the febrile ſtate is evident from hence, that it ceaſes immediately with the paroxyſm, and again recurs with it.

The debility or proſtration of ſtrength which accompanies the attack of fever, is altogether different from ordinary weakneſs of the ſyſtem, ſuch as proceeds from immoderate evacuations, inanition, or protracted diſeaſes ; it is different, alſo, from the weakneſs that takes place in the intervals of the paroxyſms of fever. In ordinary weakneſs, the perſon is unable to make the uſual exertions of health ; in the weakneſs produced by fever, he is both unable and indiſpoſed to do it. The former is permanent ; the latter is temporary only, and ceaſes immediately with its cauſe. This ſtate has been aptly termed depreſſion of ſtrength, rather than weakneſs, and may be compared with a ſpring that is overcome by a ſuperior force, but which ſtill retains its power of acting, ready to exert itſelf as ſoon as the compreſſing force is withdrawn. It is ſo conſtant a ſymptom in fever, that it has been admitted amongſt the diſtinguiſhing characters of the diſeaſe by the lateſt and beſt obſervers*.—It is almoſt needleſs to remark, how immediately dependent the voluntary power is on the ſtate of the brain ;

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* *Sauvages* in his definition of fever ſays, “ ſemper virium “ proſtratione majori, quam a virium vitalium gradu foret “ exſpectandum”—in other words, the voluntary power, which derives its energy immediately from the brain, is greatly depreſſed, beyond what the pulſe would ſeem to indicate. *Sagar* alſo makes this ſymptom a part of his definition of fever—“ viribus vitalibus pulſu et reſpiratione “ vix mutatis ; virium artuum, ſumma proſtratio.”

and how ſtrongly every great and ſudden depreſſion of it, indicates a morbid condition of this organ.

The mental faculties of perception, memory, compariſon of ideas, and judgment, are conſtantly obſerved to be more or leſs impaired in fevers, and in very many caſes are totally deranged and obſcured. In great and fatal affections of other organs, the powers of the mind frequently continue unimpaired to the laſt. Perſons dying of hernia, or mortification of the inteſtines any how produced; of peripneumony, of phthiſis pulmonalis, and many other diſeaſes; are often found competent to direct the future adminiſtration of their affairs, within a few hours of their diſſolution. But nothing of this kind, I believe, takes place in fever. In a few rare inſtances, indeed, the mental faculties appear to have been reſtored immediately before death, though they had ſuffered entire derangement throughout the previous ſtages of the diſeaſe*. But in ſuch caſes it is probable the febrile action in the brain had ceaſed, the patient dying rather of the debility, or other conſequences induced by it, than of the diſeaſe itſelf.

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* This ſeems to ſhew that fever is eſſentially a diſeaſe of *action* only, and not neceſſarily connected with a change of ſtructure. The ſame appears alſo from the intermiſſions to which it is occaſionally ſubject, during which it is ſcarcely probable that any material change of ſtructure, or diſorganization to any great extent, can be preſent.

Delirium may be ranked among the moſt common occurrences in fever. In every violent caſe of the diſeaſe, it almoſt invariably appears; for fever, I believe, rarely if ever proves fatal, without this ſymptom manifeſting itſelf. Its preſence is an infallible indication of a morbid condition of the brain. "Ponit ſemper delirium," ſays Boerhaave, "cerebri medullaris affectionem morboſam*;" "quoniam," ſubjoins his illuſtrious commentator, "in medullâ cerebri ille locus eſt, unde idearum ortus pendet†."

There are many other phenomena of the nervous ſyſtem in fevers, which point ſtrongly to an affection of the brain as their ſource. Epileptic fits are often the precurſors of a febrile paroxyſm, by whatever cauſes induced, particularly in the more irritable bodies of infants. Other convulſive motions take

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This is a reaſon why we ſhould not expect the nature of fever to be fully elucidated by diſſection; for great derangement of action may ſubſiſt during life, without leaving behind it any traces viſible after death.

[*] Aph. 701.

[†] Van Swieten Comm., p. 701.

place during the progreſs of fevers, as tremors of the hands, and of the tongue when put out for inſpection; irregular motions of the eyes and eyelids, the latter remaining half open in the time of ſleep; grinding of the teeth; *ſubſultus tendinum; muſcæ volitantes;* and paralyſis of the ſphincter muſcles. Theſe accompany almoſt every bad caſe of fever: that they depend on a topical affection of the brain, is rendered probable from this, that the ſame ſymptoms are found to occur from external injuries inflicted on this organ. In warm climates, fevers are not unfrequently accompanied by univerſal ſpaſmodic affections, as opiſthotonos, emproſthotonos, and the like; whilſt they often lay the foundation for future palſy, apoplexy, epilepſy, aphonia, fatuity, and mania*, all of them indubitable indications of antecedent diſorder of the brain.

The eyes and general countenance are ſtrongly marked in fever, and afford very evident indications of the principal ſeat of the diſeaſe. The dull, languid, unmeaning eye; the ſtupid ſtare, and general want of expreſſion in the features, have been noticed by every practitioner. They ſerve to denote the preſence of genuine fever much more ſtrongly than either the exceſs of heat in the ſkin, the quickneſs of pulſe, or the foul tongue; all of which are very variable in fever, and to be found in a number of other diſeaſes.

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* Huxham's *Eſſay on Fevers*, p. 88.

Obſerve a patient lying proſtrate in the laſt ſtage of conſumption, dozing, his ſtrength exhauſted, ſliding, through mere weakneſs, towards the bottom of the bed; his ſkin hot and dry, pulſe ſmall, weak, and without hardneſs, the tongue covered with a brown fur, and the throat and cheeks ſpotted with aphthæ—looking no further, ſuch a caſe might be taken for typhus. But the patient opens his eyes, and the illuſion vaniſhes: there is nothing of that ſtupid ſtare, or muddy, bloodſhot eye, or dull unmeaning look, which at once characterize brain affections, and diſtinguiſh them from all other diſorders. "Topical affections of the brain," ſays the celebrated Cullen, "generally diſcover themſelves in the face, both in conſequence of its proximity, and of the diſtribution of its nerves, which ariſe immediately from the brain*."

The ſtate of the patient, in regard to ſleep and watching, in fever, is always different from that of health, and, with the other ſymptoms, ſerves to indicate a diſordered ſtate of the ſenſorium. In ſome fevers, in certain ſtages of the diſeaſe, want of ſleep is a conſtant ſymptom, and the one which the practitioner is in general moſt anxious to overcome. At other times, drowſineſs and ſtupor are equally remarkable. And, when ſleep does occur in fever, it is for the moſt part unquiet and diſturbed, and has not its uſual refreſhing and reſtorative effects. The patient dreams of dangers and precipices, wakes ſuddenly, and ſtarts with affright.

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* *Clinical Lectures*, 8vo, p. 118.

To all this it may be added, that the ſenſations of the patient in fever point uniformly to the head as the chief ſeat of complaint. For as long as conſciouſneſs remains, and delirium is abſent, pain or other uneaſy feeling in the head is invariably complained of. Along with this, pain in the back and loins is uſually conjoined, and is probably to be referred to the connexion of the ſpinal marrow with the brain, of which it is, in fact, merely a continuation*. It appears, therefore, from what has been ſaid above, that the *animal* functions, as they have been called, to wit, ſenſation and voluntary motion, and likewiſe the powers of the mind, all of which depend immediately on the brain, and vary with every variation in the ſtate of this, are conſtantly and greatly deranged in every caſe of proper fever. The other claſſes of functions, the *vital* and *natural*, are neither ſo immediately dependent on the brain, nor are they primarily and eſſentially diſturbed in fever, as will preſently be ſeen. It is not in theſe, therefore, that the characteriſtic ſymptoms of the diſeaſe are to be looked for.

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* “ Spinæ medulla minimè maximus nervus, ſed pars tantum cerebri poteſt haberi ; notæ enim ejus ab omnium nervorum notis ſunt diverſæ, cerebri vero notis reſpondent.”—Soemmering, *De Corp. Hum. Fab.*, tom. 4, § 73.

## Sect. III.---*Of the State of the* VITAL FUNCTIONS *in Fever.*

THE *vital functions*, namely, reſpiration and the circulation of the blood, are liable to be variouſly affected in fever, but in a ſecondary way only.

Provided the organs of reſpiration are not attacked by inflammation during the courſe of fever (an occurrence, by the by, not at all uncommon), reſpiration is no otherwiſe affected than may be attributed to a more violent or otherwiſe diſordered ſtate of the circulation. Sighing, anxiety, and a ſenſe of oppreſſion at the præcordia, are, indeed, marked as frequent ſymptoms in fever, eſpecially in the cold ſtage. But although theſe uneaſy feelings have their immediate ſeat in the region of the heart and lungs, they may be referred primarily to the diſordered ſtate of the ſenſorium, as they are found to accompany other morbid affections of this organ.

The muſcles of reſpiration are partly ſubject to the will, and are ſo far, like the other muſcles of voluntary motion, in immediate dependence on the brain. In the general depreſſion of the voluntary power which takes place in fever, the muſcles of inſpiration muſt ſuffer in ſome degree; hence the cheſt is leſs perfectly dilated, and the blood, in conſequence, more difficultly tranſmitted through the lungs. This gives riſe to an undue accumulation of blood about the heart, the uneaſineſs excited by which occaſions an unuſual effort to expand the cheſt. In this way, I think, may be explained, in a great meaſure, the ſighing, anxiety, and oppreſſion at the præcordia, which occur more particularly in the cold fit of fever, when the debility of the voluntary muſcles is in the extreme. The uneaſy feeling that takes place in this caſe is relieved both by ſighing (or deep inſpirations) and by yawning, in which the cavity of the cheſt is expanded to the utmoſt.

Something in this caſe may be attributed, alſo, to the general inſenſibility which accompanies the cold fit of fever, under which the neceſſity for regular reſpiration is imperfectly felt, and the intervals of breathing conſequently protracted: this, of courſe, gives riſe to undue accumulation of blood on the right ſide of the heart, and induces a neceſſity for deep inſpiration. It is in proof of this, that where preſſure exiſts on the brain, as by effuſion of ſerum or other cauſes, reſpiration is ſlow, and interrupted with frequent ſighs: and the ſame thing occurs, when the mind is deeply engaged in the contemplation of any object.

With reſpect to the ſtate of the general circulation in fever, as aſcertained by the pulſe, it appears often to be carried on with little variation from that of health; and when the contrary occurs, the change is various in the different ſtages of the ſame fever, and varies alſo with the habit and temperament of the ſick, the ſeaſon of the year, climate, and other external circumſtances.

A quick or frequent pulſe has, by many phyſicians, been made the definition of fever; but in this caſe the term fever has been employed in its greateſt latitude; as including the ordinary febrile ſtate, ſymptomatic of various irritations in the ſyſtem. In idiopathic fever, frequency of the pulſe is by no means a neceſſary nor a conſtant ſymptom; for we have the teſtimony of the beſt authors to prove, that in ſome fevers the pulſe is even ſlower than natural, whilſt in a great many others, and thoſe often of the moſt malignant character, it ſcarcely varies from the healthy ſtandard.

Hodges, in his deſcription of the plague which prevailed in London in his time, ſays, "the pulſe, which in all other diſeaſes is "almoſt a certain index, in this ſickneſs "could not at all be truſted to*." Sydenham, in various parts of his writings, remarks, that in fevers, even of the moſt malignant and fatal ſtamp, the pulſe ſometimes hardly varied from the natural. "Many have a good pulſe in this fever," (the yellow fever of the Weſt Indies) ſays Lind, "even a few hours before death." (*Lind on Hot Climates*, p. 257).

Fordyce ſays, "a fever may be preſent "in a great, and even in a fatal degree, "without the pulſations being increaſed "in frequency†." Dr. Ruſh of Philadelphia obſerves, that he ſaw ſome ill of the yellow fever, whoſe pulſe beat only forty times in a minute; and Dr. Wittman, in his account of the malignant fever which prevailed in Syria in the year 1801, remarks, that

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*Hodges's *Treatiſe on the Plague*, p. 103.

† *Firſt Diſſertation on Fever*, p. 18.

in the worſt caſes, where conſtant delirium, dilated pupils, petechiæ, yellowneſs of the eyes and ſkin, coldneſs of the extremities, &c., were preſent, the pulſe was ſcarcely changed, and by no means indicated danger* †.

It is certain, therefore, that the primary ſeat of fever is not to be found in the general vaſcular ſyſtem; ſince in various caſes, and in different ſpecies of the diſeaſe, the heart and arteries continue their functions in a great meaſure unchanged. When the contrary takes place, as is alſo frequently the caſe, the diſorder in the circulation is eaſily referred to irritation or oppreſſion of the brain; for this organ is unqueſtionably, in certain circumſtances, capable of influencing the actions of the heart, in common with thoſe of every other part of the ſyſtem. Writers on ſurgery teach us, that injuries of the brain from external violence may render the pulſe either frequent, or ſlow, or unequal, according to the nature and degree of the injury inflicted. Thus a quickened pulſe, in ſuch caſes, denotes irritation of this organ; and a ſlow one, compreſſion of the medullary ſubſtance. It ſeems not improbable, that the greater or leſs diſorder obſervable in the general circulation in fevers, may depend on the particular part of the encephalon affected; ſince we know that one part of this organ has a more immediate influence than others over the vaſcular ſyſtem. In the experiments of *Kauu Boerhaave**, the vital motions in animals continued for eight hours after the medullary part of the brain was reduced to a mere pulp, by violence; whereas, when the cerebellum was ſo treated, the action of the heart began to fail in a few minutes. This would lead one to ſuppoſe, that where, along with the other ſymptoms, the pulſe is greatly deranged in fevers, the cerebellum is, in ſuch caſes, more affected than in others.

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* Wittman's *Travels in Syria*, 4to, p. 79.

† A hoſt of other authors might be cited, in proof of the ſame circumſtance, in regard to malignant and peſtilential fevers; as Werlhoff (1), Gredingius (2), Proſper Alpinus (3), Nicolaus Maſſa (4), Rye (5), Ruſſel (6), Bordeu (7), and Sauvages (8). While Tremellius (9) and De Haen (10) make a ſimilar remark, with regard to inflammatory fever.

(1) Werlhoff *de Cautione*, p. 39. *et de Variolis*, p. 37.——(2) Ludwig. *Adverſ. Med. Pract.*, v. i, c. 1.——(3) *De Med. Ægypt.*, l. i, c. 14.——(4) *De Feb. Peſtil.*——(5) *Med. Stat. Brit.*——(6) *Nat. Hiſt. of Aleppo*, 4to, p. 230.——(7) *Recherches ſur le Pouls.*——(8) *Noſ. Method.*, tom. 2, p. 307.——(9) *Exam. Frigor. Feb.*, p. 7.——(10) *Rat. Med.*, p. 12, c. 2.

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* *Impetus Faciens.*

## Sect. IV.---*Of the State of the* NATURAL FUNCTIONS *in Fever.*

THE *natural functions* are liable to be very variouſly affected in fever. With regard to digeſtion, aſſimilation, and nutrition, theſe, as has been already obſerved, nearly ceaſe altogether during fever; and not only ſo, but the body rapidly waſtes; ſhewing that the activity of the interſtitial abſorbents is ſtill continued, and probably increaſed beyond the degree of health.

The organs of ſecretion and excretion commonly have their functions impaired, and ſometimes ſuſpended, in fever. Hence the urine and ſaliva are ſcanty, the ſkin is parched, and there is a deficiency of bile in the inteſtinal canal. At other times, the reverſe of all this occurs: copious ſweating takes place, or an exceſſive ſecretion from the liver; and ſometimes even ſalivation, as in certain caſes of ſmall-pox. The ſame defect and inequality of action are obſerved in the other ſecretory and excretory organs. Sometimes the bowels are conſtipated;

at others, their actions are preternaturally increaſed; whilſt, in many caſes of fever, the natural evacuations take place nearly as in health.

This irregularity with regard to the *natural functions* in fever, ſhews that they ſuffer in a ſecondary way only, and of courſe indicate nothing certain as to the primary ſeat of the diſeaſe.

The ſtate of the ſtomach in fever merits a more particular conſideration. This organ appears to be conſidered, by many, as the great ſtorehouſe of diſeaſe in the human body, and particularly with regard to affections of the head. Nothing is more common than to hear of headachs, vertigoes, and even apoplexies and palſies, being referred to the ſtomach, as if this were the actual ſeat of morbid affection in theſe caſes. The effect is here, I believe, often taken for the cauſe. It is not to be queſtioned that a very cloſe and intimate connexion ſubſiſts between the head and ſtomach, ſo that the condition of the one is liable to be much influenced by that of the other. Admitting this, however, it is not warrantable to aſſign the ſtomach as the principal ſeat of diſeaſe in ſuch caſes. No affection of the ſtomach *per ſe* could occaſion ſuch ſymptoms as headach or vertigo, nor conſtitute the immediate cauſe of apoplexy or palſy: all theſe are manifeſtly affections of the brain and its functions.

The proper explanation ſeems to be this. When a morbid condition exiſts in the brain or its veſſels, the latter acquire an increaſed irritability, which diſpoſes them to be thrown into violent and irregular action from trivial cauſes, ſuch as cold applied to the ſurface of the body, paſſions of the mind, violent exertion, exceſſes of any kind, and none more than thoſe which concern the ſtomach. The diſorder of the ſtomach in this caſe, like the application of cold, is a remote cauſe only of the brain-affection, and, like other remote cauſes in general, both uncertain and unequal in its action: the true ſeat of diſeaſe in headach, vertigo, apoplexy, and the like, as far as theſe are primary affections, is ſtill the brain or its veſſels; and in the treatment, it is neceſſary to keep this conſtantly in our view.

Diſeaſes, no doubt, are often cured by obviating their remote cauſes; and in this way, a ſtrict attention to the ſtate of the ſtomach, from its cloſe ſympathy with the brain, is a matter of great importance in all diſeaſes of this organ. But this alone is ſeldom ſufficient. The other occaſional cauſes muſt be equally avoided, and the diſeaſed ſtate of the brain either directly relieved, or the prediſpoſition to irregular action in its veſſels obviated. In endeavouring to effect the latter purpoſe, we often act through the medium of the ſtomach; as by giving remedies calculated to diminiſh morbid irritability, ſuch as *bark* and others uſually called *tonics:* and hence a further proof ſeems at firſt to be afforded, that the ſtomach is the chief ſeat of diſeaſe; but the fallacy of this may be eaſily ſeen, from what has been already ſaid.

The functions of the ſtomach appear, almoſt invariably, to be deranged at the very firſt attack of fever, and to continue ſo throughout its whole courſe. Want of appetite, loathing of food, and nauſea ending frequently in actual vomiting, are the never-failing concomitants of fever, in greater or leſs degree. Theſe ſymptoms are ſo common and ſtriking, that many have conſidered the ſtomach to be the chief and primary ſeat of fever. This, however, appears improbable, for the following reaſons.

Granting that the functions of the ſtomach are commonly diſturbed in fever, the ſame is more eſpecially true of the functions of the brain, which, as ſhewn above, never fail to be perverted in this diſeaſe. The diſordered ſtate of the brain, therefore, may as well be ſuppoſed the primary cauſe of the diſturbance obſerved in the functions of the ſtomach in fever, as the reverſe; and this, I have no doubt, is actually the caſe.

The influence of the brain on the ſtomach is diſcoverable in a thouſand inſtances. In moſt diſeaſes of the brain that are accompanied with a febrile ſtate of the ſyſtem, the appetite for food is greatly impaired, and the power of digeſtion in a great meaſure ſuſpended: the attempt, too often made, to give ſtrength in ſuch caſes by nutritious aliment, is as abſurd and prepoſterous, as it is certainly unavailing. On the other hand, in morbid affections of the brain of a chronic kind, and which are unattended by fever, as in many inſtances of palſy and hydropic effuſion within the ſkull, the appetite often becomes voracious, in proportion as the intellectual powers are obliterated. In both caſes, the affection of the ſtomach is equally preternatural, and dependent on the morbid condition of the brain.

Again, in injuries of the head from external violence, vomiting, as is well known, is amongſt the moſt certain ſigns of the brain itſelf being injured. A diſordered ſtate of the ſtomach, therefore, is no certain proof of its being the primary ſeat of diſeaſe in any caſe, and ſtill leſs in fever, in which ſo many other functions are diſturbed.

This frequent affection of the ſtomach in fever it is perhaps not difficult to underſtand, upon phyſiological principles. The ſtomach not only receives nerves from the *great intercoſtal*, for the ſupport of its ſimple or organic life, but alſo communicates directly with the brain, by means of the eighth pair of nerves, or *par vagum*. From this (the par vagum), it probably derives its peculiar ſenſations and appetites, thus becoming in ſome meaſure an organ of ſenſe as well as of motion and ſecretion, and therefore, like the other ſenſes, depending more immediately on the brain, and obeying its different impulſes. Hence it is little to be wondered at, that the functions of the ſtomach in fever, like thoſe of the other organs of ſenſe, ſhould ſuffer a deviation from the natural ſtate. In this way, the uneaſy ſenſation often felt at the pit of the ſtomach in fever, the total want of appetite, the loathing and diſguſt commonly experienced even at the ſight of food, are naturally and eaſily accounted for.

The dependence of the functions of the ſtomach on the nervous power, as derived from the brain, is ſhewn in the experiments of tying the eighth pair of nerves in dogs, in conſequence of which they become affected with indigeſtion and flatulency*; and alſo by the effect of large doſes of opium in theſe animals, which ſuſpend almoſt entirely the periſtaltic motion of the ſtomach and inteſtines, while the action of the heart ſuffers comparatively little change†.

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* Whytt's *Works*, 4to, page 592.

† Kauu Boerhaave *Impetus Faciens*, § 434.

## Sect. V.---*Of ſome other Phenomena of Fever.*

BESIDES the diſturbance of the various functions above mentioned, there are other phenomena that frequently preſent themſelves in fever, and which have been much employed in ſpeculations on its nature and proximate cauſe. This has been the caſe particularly with regard to the coldneſs and ſhrinking of the extreme parts, the rigors and ſhuddering which uſher in ſo many fevers. Theſe ſymptoms have been ſuppoſed at once to indicate debility of the extreme veſſels on the ſurface of the body, and deficient energy of the nervous power in general*. And, as the cold fit has been thought to conſtitute the primary link in the chain of effects produced by the agency of the remote cauſes of fever, debility has conſequently been ſuppoſed to conſtitute the eſſence, or proximate cauſe, of the entire diſeaſe.

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* "Upon the whole, our doctrine of fever is explicitly this. The remote cauſes are certain ſedative powers applied to the nervous ſyſtem, which, diminiſhing the energy of the brain, thereby produce a debility in the whole of the functions, and particularly in the action of the extreme veſſels."—*Firſt Lines of the Practice of Phyſic*, by William Cullen, M.D. § 46.

Without attempting to explain the way in which the ſymptoms mentioned are produced by the remote cauſes of the diſeaſe, it may be obſerved that they are not eſſential to fever, ſince many fevers begin without any perceptible rigors or cold fit. Nor are they peculiar to idiopathic fevers, but are obſerved to accompany moſt great and ſudden changes that take place in the ſyſtem. Thus, various topical inflammations, as well as fevers, are uſhered in by rigors and a cold fit: and the ſame ſymptoms again appear, when extenſive ſuppuration is about to take place in any part of the body. They are obſerved, alſo, at the approach of parturition in women, and are often produced by mental affections. They cannot, therefore, be conſidered as affording any elucidation of the peculiar nature of fever, or of its particular ſeat in the body.

*Petechiæ*, *maculæ*, and *vibices*, may be ranked among the phenomena which accompany the worſt forms of fever. Theſe appearances have been uſually attributed to a vitiated or rather a putreſcent ſtate of the fluids in general, in conſequence of which, their craſis being broken down, the blood eſcapes from the veſſels, occaſioning the appearances mentioned, and oftentimes giving riſe to hæmorrhages from the different excretory organs. This explanation, though plauſible, is attended with conſiderable difficulties. The ſymptoms alluded to are tranſitory and inconſtant; often diſappearing within the ſpace of a few hours, merely by the uſe of tonic and ſtimulant remedies—remedies which could have no immediate effect in altering the condition of the vital fluid. Dr. Donald Monro mentions a caſe of intermittent fever in which petechiæ appeared only during the paroxyſms*. They have been obſerved likewiſe where the blood, drawn from the arm, has exhibited a denſe buffy ſurface, as well as in a broken and diſſolved craſis of it.

The French chemiſts, Parmentier and Deyeux, examined chemically the blood of a number of perſons ill of putrid fever, and they remark that they never found it twice alike. Sometimes the firſt bleeding afforded much buff, at other times very little, and ſometimes none at all. Sometimes the ſerum ſeparated readily from the craſſamentum, but oftener with difficulty. The buff when analyzed was found to be ſimilar to that of inflammatory diſeaſes; the coagulum beneath had little conſiſtence, was very ſoluble in water, and the ſolution was coagulable by heat, alkohol, and the concentrated acids. No volatile alkali aroſe on diſtillation in a water bath, nor was the liquor that came over at all of an alkaline nature. Diſeaſed and healthy blood were obſerved to take nearly the ſame time in becoming putrid*. There appears, therefore, to be no foundation for the ſuppoſition, that the general maſs of blood in putrid fevers is in a diſſolved or putreſcent ſtate. The phenomena in queſtion appear to me to admit of a more ſatisfactory explanation in the following way.

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* *Diſeaſes of Military Hoſpitals.*

The excitability and power of contraction of the blood-veſſels, there can be no doubt, depend, more or leſs directly, on the influence of the brain and nerves. In living animals, the blood is retained within its proper channels more by the contractility of veſſels, than by the ſmallneſs of their diameters. For it has been found on experiment, that when recent fluid blood is injected into the arteries of a living animal, it is confined to the veſſels which naturally carry red blood; but when the animal is ſuddenly deprived of life, as by diviſion of the ſpinal marrow, the injected blood is found to enter veſſels which, in the natural ſtate, convey only the colourleſs part of it, as thoſe of the perioſteum and other membranes, tinging them of a red colour.

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* *Annales de Chymie,* quoted in *Med. and Chir. Review,* vol. xii, p. 161.

The purple ſpots, the yellow and livid ſtreaks obſerved in various parts of the body, the maculæ, petechiæ, vibices, and hæmorrhages, therefore, which ſo often accompany malignant fevers, are rather, I think, to be attributed to a torpid or nearly paralytic ſtate of the extreme veſſels, in conſequence of which the blood ſtagnates in their extremities, or is poured out into the cellular membrane adjoining[*]. This torpor indicates, as in other paralytic caſes, a vitiated ſtate of the nervous power. In confirmation of this it may be mentioned, that Lieutaud found the brain, after death, to be organically diſeaſed, in ſome patients that laboured under *petechiæ ſine febre*[†].

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[*] It is remarked by Sir John Pringle (p. 304), that, in ſome caſes of malignant fever, petechiæ made their appearance after death.

[†] *Hiſt. Anat. Med.*, obſ. 148, 211.

The opinion is rendered further probable, alſo, from obſerving the effects of certain poiſons, which manifeſtly exert their chief influence on the brain and its functions. In animals killed by the laurel water, and ſimilar narcotic poiſons, the red blood has been obſerved to paſs into the ſerous veſſels*. And the bite of the ſerpent *hæmorrhous* is ſaid to occaſion ſuch a diſſolution of the blood (or, as I ſhould prefer ſaying, ſuch an atony or paralyſis of the extreme veſſels), that it flows from every pore, deſtroying the patient by an univerſal hæmorrhage†. At the ſame time, it is not improbable that the blood itſelf, admitting it to be poſſeſſed of the living principle, undergoes a change in its properties, in common with the living ſolids; though with the nature of this change we are unacquainted: it appears, however, to influence its power of coagulation.

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What has been ſaid above, reſpecting the ſeat of fever being in the brain, applies not only to fevers ſtrictly ſo called, but to the exanthemata, or eruptive fevers, and to ſuch as are attended with ſpecific inflammation of certain parts, as *cynanche maligna*, *parotidœa*, and perhaps others. In all theſe caſes, there appears to be a double or compound affection; to wit, the external topical inflammation, and the fever that precedes or accompanies it: theſe are in all caſes ſufficiently diſtinct. The eruptive fever is characterized by all the ordinary ſigns of fever ariſing from other cauſes, and can ſeldom be diſtinguiſhed but by the attendant local ſymptoms. No one, I apprehend, could, from the firſt ſymptoms, or even at any time previous to the eruption, predict future ſmall-pox with any tolerable degree of certainty, where the patient was not known or ſuſpected to have been previouſly expoſed to contagion. The diſeaſe, as in ſimple fever, is uſhered in by rigors, and other ſymptoms of the cold fit; to which ſucceed, heat, pain in the head and back, with ſimilar derangement of the functions of ſenſation, voluntary motion, and intellect. The ſame is true of the reſt of the exanthemata, and the other ſpecific diſorders above mentioned, in all of which the ſymptoms, as far as regards the fever, are eſſentially alike, though undoubtedly, in ſome degree, modified both by the accompanying topical affection, and perhaps alſo by the peculiar nature of the exciting cauſe. Whatever, therefore, be the primary ſeat of common fever, it appears to be equally ſo of the various exanthematic fevers, and of thoſe accompanied by ſpecific inflammation.

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* Cullen's *Mat. Med.*, vol. ii, p. 286.

† Mead *on Poiſons.*

Such are the arguments deducible from the phenomena of fever, in ſupport of the opinion of its being primarily and eſſentially a topical affection of the brain. An examination of the remote cauſes will, I think, ſtrengthen the concluſion.

## Sect. VI.---*Of the Remote Cauſes, as indicating the Seat of Fever.*

DR. Cullen wiſhed to confine the remote cauſes of fever to two ſources, namely, human effluvia and marſh miaſmata; the former, in his opinion, giving riſe to contagious and continued fevers, the latter to thoſe of the intermittent and remittent type. In this, I believe, he ſtands almoſt ſingle. It has been the general opinion of practitioners in all ages, that the remote or occaſional cauſes of fever are numerous, and of very different kinds; and there ſeems little reaſon to queſtion the fact. It is, no doubt, impoſſible to prove, that a perſon attacked with fever had, at no time before, been expoſed to animal contagion, or marſh effluvia, or ſomething analogous to theſe. A perſon, as Dr. Fordyce obſerves, may have paſſed the opening of a common ſewer, or come nearly into contact with a patient labouring under fever; or the noxious effluvia may have been brought from a diſtance through the air, or by other conveyances. In a great many caſes, however, there is no room to ſuſpect any thing of this kind; while the diſeaſe has ſo frequently followed many of the other cauſes aſſigned, and that ſo ſpeedily after their application, as remarked by different obſervers, that there is little reaſon to queſtion the agency of them.

The remote cauſes which have been generally aſſigned by writers of the beſt obſervation as producing fever, are the following: heat, cold, and eſpecially the alternation of theſe; intemperance of various kinds; irritation of different parts, as of the ſtomach from improper food, particularly food of a certain kind, as crabs and other ſhellfiſh, which readily excite fever in ſome conſtitutions; irritation of the inteſtinal canal, by worms, eſpecially in children; certain paſſions of the mind; putrid vapours; marſh miaſmata; human and animal contagion; and perhaps many other poiſons that are unknown to us.

There are other cauſes alſo which ſeem occaſionally capable of exciting fever. A little girl, whirling herſelf round ſwiftly in play, became vertiginous, vomited, and complained of pain in the head, to which ſucceeded increaſed heat and thirſt; theſe ſymptoms continued for the ſpace of four and twenty hours, and then terminated in a critical ſweat. A boy, being in perfect health at the time, went into the cellar of a braſs-founder, where a quantity of charcoal was burning. He was ſeized at the moment of entrance with ſevere headach, and ſickened immediately with a fever of the typhoid form, and which continued for fourteen days.

Of ſome of the cauſes of fever mentioned above, it is difficult to aſſign the mode of acting; others, however, are ſuch as are known to exert their action chiefly on the brain and nervous ſyſtem. Of this kind is intoxication, which is often ſucceeded on the following day by headach, increaſed heat, and other ſymptoms, ſcarcely if at all diſtinguiſhable from fever generated from other ſources. Indeed, this is one of the generally-admitted cauſes of genuine idiopathic fever. On the other hand, the ſymptoms of fever ſo ſtrongly at times imitate drunkenneſs, as to have been confounded with it. "There is a ſpecies of delirium," ſays Dr. Trotter*, "that often attends the early acceſſion of typhus fever from contagion, that I have known to be miſtaken for ebriety. Among ſeamen and ſoldiers, where habits of intoxication are common, it will ſometimes require nice diſcernment to decide; for the vacant ſtare in the countenance, the look of idiotiſm, incoherent ſpeech, faltering voice, and tottering walk, are ſo alike in both caſes, that the naval and military ſurgeon ought at all times to be very cautious how he gives up a man to puniſhment under theſe ſuſpicious appearances."

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* Trotter's *Eſſay on Drunkenneſs*, 8vo, 1804. London.

The vapours of burning charcoal produce, in moſt people, vertigo, headach, and throbbing of the temporal arteries; ſymptoms which, if aggravated and continued, would conſtitute the ſtate of fever. External violence inflicted on the head, occaſions very ſimilar ſymptoms; viz., vertigo, and vomiting, to which fever not unfrequently ſucceeds, as we learn from the practice of ſurgery. Dr. Dryſdale, deſcribing the fever which raged at Philadelphia in the year 1794, ſays, the mate of a veſſel, who had been expoſed to contagion, received a ſevere blow on the head from a cable, and was immediately attacked with the fever*.

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* Coxe's *Med. Muſæum*, No. 1, p. 33.

Fear, grief, and anxiety, as they denote an affection of the ſenſorium, ſo they are by almoſt all writers included amongſt the occaſional cauſes of fever. Van Swieten relates the caſe of a girl who, when in health, being terrified at the unexpected ſight of a dormouſe, fell immediately into a quartan ague, which continued to recur for a whole winter, and was brought back again, after it had ceaſed, by a repetition of the ſame cauſe*. On the other hand, intermittents have often yielded at once to mental emotions, after having reſiſted every ordinary remedy. Thus Pliny informs us, that the Roman Conſul *Quintus Fabius Maximus*, was cured of a quartan ague inſtantly on entering into battle with the *Allobroges* and *Averni*†. Theſe facts, though far from deciſive when ſingly taken, concur with others in ſhewing the connexion of fever with the ſtate of the brain.

Inflammation on the ſkin may likewiſe be ranked among the exciting cauſes of fever, and probably acts upon the principle of irritation. Eryſipelas is thus frequently ſucceeded by fever; when the diſorder is ſaid to *fly to the head.* This is a frequent cauſe of that variety of fever which is vulgarly called *brain-fever*, a term that might not unaptly be applied to every proper fever, in order to diſtinguiſh it from other inflammations. The ſecondary fever of ſmall-pox is probably to be explained in the ſame way; the quantity of inflammation on ſo irritable a part as the ſkin, which, like the other organs of ſenſe, has a cloſe ſympathy with the brain, becomes in this caſe the exciting cauſe of the diſeaſe. It is in this way alſo, I apprehend, that violent external injuries, and operations in ſurgery, often terminate fatally; namely, by exciting fever, or a topical affection of the brain.

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* Comm., § 755.

† Plinii *Hiſt. Nat.*; lib. vii, cap. 50.

It would ſeem, therefore, that beſides the ſpecific cauſes of fever, namely, the different contagions and miaſmata, the mode of acting of which we are ignorant of, irritation of various kinds, mental as well as bodily, if in ſufficient degree, may become the exciting or occaſional cauſe of fever. But irritation, in order to its affecting the ſyſtem generally, muſt operate through the medium of the brain, as the common center of feeling, and the organ of the ſympathy or conſent that obtains between different parts. The brain, thus irritated, will have its functions more or leſs diſturbed from the natural and healthy ſtate. The diſturbance may be in every poſſible degree, and may manifeſt itſelf in different functions, depending perhaps upon prediſpoſition, or other circumſtances that we do not clearly underſtand. Sometimes the irritation is ſuch as to aboliſh ſuddenly the mental and voluntary powers, giving riſe to epilepſy or convulſions, as is often the caſe in infants: the effect here is commonly temporary, and of ſhort duration: ſometimes it produces fever ſimply, the affection then becoming permanent, and obſerving a certain progreſs, independent, as on other occaſions, of the cauſe which firſt excited it

## Sect. VII.---*Of Prediſpoſition to Fever, as contributing to point out the Seat of the Diſeaſe.*

THERE are ſome circumſtances reſpecting the prediſpoſition to fever which ſeem to corroborate the idea of the brain being the chief ſeat of morbid affection. It has been ſaid, that idiots, maniacs, negroes, very old people[*], and likewiſe new-born infants, are leſs liable to fever than others; and that brutes[†] never labour under proper fever. There is, probably, ſome foundation for theſe obſervations, though they may not be true to the extent mentioned. Admitting the fact generally, it may be accounted for, perhaps, in the following manner.

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[*] "I have been phyſician," ſays Dr. Moſeley, "to Chelſea Hoſpital for nearly twenty years. We have conſtantly in the Hoſpital four hundred and ſeventy-ſix penſioners; all above ſixty years of age. During that period, and for twenty years preceding, there has been no popular diſeaſe nor epidemic fever in Chelſea Hoſpital. Not a ſingle inſtance of ſmall-pox has occurred among the penſioners during all that time." (*Commentaries on Cow-pox*, 1806, p. 76.)

[†] It is Stahl who ſays that brutes are not liable to fever. (*Theor. Med.*, ſect. 3, p. 936.)

In idiots and in maniacal perſons a defective or morbid condition of the brain, and with it of the general ſenſibility of the ſyſtem, already exiſts, and which, as we ſee, renders them inſenſible to a variety of impreſſions, both internal and external. It is not ſurprizing, therefore, that ſuch perſons ſhould be in a great meaſure inſuſceptible of many of the cauſes of fever. And with regard to negroes, the general ſenſibility of the body in them is manifeſtly defective, while the intellectual powers, either from habit or nature, are in a conſiderable degree dormant; and ſo far the brain in them may be ſaid to be in a ſtate of comparative inactivity.

The weak ſenſibility of negroes is ſhewn in their freedom from care and anxiety in ſituations and under circumſtances that, to Europeans, would be productive of great mental diſtreſs;—in their hardineſs in reſiſting the inclemencies of weather, and the conſequences of drunkenneſs and gluttony;—in their almoſt total exemption from any feelings of diſguſt;—in their undiſturbed ſleep and undiminiſhed appetite often, though labouring under the moſt grievous maladies*. Theſe circumſtances all ſhew a comparatively defective condition of the brain or ſenſorium, which might be expected, even *à priori*, to render them inſuſceptible of the action of many cauſes which operate readily upon ſyſtems differently conſtituted.—The ſame reaſoning applies, of courſe, more ſtrongly to the caſe of brute animals, in which the functions of the brain are of a much leſs complicated nature, and the organization probably more ſimple.

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* See Moſeley and other writers on the Diſeaſes of Tropical Climates. Negroes are ſaid to be very deficient in

In new-born infants, which are well known to be in a conſiderable degree inſuſceptible of the action of febrile contagions, the external organs of ſenſe are ſcarcely yet evolved: they neither ſee, hear, ſmell, nor taſte, as at a more advanced age. When, therefore, the organs are hardly ſenſible to

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*ſenſibility*, but to abound in *irritability*. This peculiarity of conſtitution keeps them free from many diſeaſes to which the whites are ſubject; but, in return, they are liable to many diſtempers which are ſeldom, or never, obſerved in the latter. They are incomparably more ſubject to convulſive and ſpaſmodic affections, as tetanus, &c., in which reſpect they reſemble the domeſtic animals in warm climates. They are ſubject alſo to an extremely malignant kind of ſcurvy, to boils, ulcers, and a variety of eruptions that have no name in this part of the world. It has been remarked as a ſingular coincidence, that idiots and inſane people among Europeans are diſpoſed to exactly ſimilar complaints.

their ordinary and proper ſtimuli, it might be expected that they would be leſs ſubject to the influence of morbific cauſes, many of which, probably, act on the ſyſtem through the medium of thoſe very organs. In old age, on the other hand, the ſyſtem in general becomes torpid and inirritable; hence the exciting cauſes of diſeaſe, like other external agents, make but a feeble impreſſion on the part to which they are immediately applied, while, at the ſame time, the brain is with difficulty rouſed into action by ſympathy; ſo that little or no general effect follows. With regard to infants, however, it will be ſhewn in the ſequel, that although they reſiſt the application of various contagions, they are yet ſuſceptible of fever from other cauſes, and indeed much more ſo than at any other period of life.

## Sect. VIII.---*Of the Conſequences of Fever, as indicating its Seat.*

FEVER is apt to leave behind it a train of conſequences, ſtrongly indicative of a previous morbid ſtate of the brain, and which, indeed, are only to be explained upon ſuch a ſuppoſition; ſince ſimilar effects are not obſerved to reſult from the affection of other organs, however violent or long-continued. It is in the functions immediately depending on the brain, that the conſequences alluded to are particularly ſeen.

The organs of ſenſe are often found impaired after fevers, and ſometimes irrecoverably ſo. The ſenſe of hearing is, perhaps, moſt frequently deranged in theſe caſes, though impaired ſight or irregular viſion, depraved ſenſe of touch, inducing either torpor or exquiſite ſenſibility, with ſimilar vitiation of the ſenſes of taſte and ſmell, have all been obſerved as conſequences, or ſequelæ, of fever, and are by no means uncommon.

Paralytic affections very frequently ſucceed to fever; ſometimes the palſy is pretty univerſal, ſometimes of half the body; and ſometimes of a ſingle limb only, which, in the language of the vulgar, is then ſaid to wither away, *from the fever ſettling in it.* Convulſive diſorders, likewiſe, often follow fevers; as epilepſy, chorea, or hyſteria; all of them, affections of the voluntary power, and of courſe ſhewing a morbid condition of the organ on which this faculty eſpecially depends.

The powers of the mind are no leſs commonly impaired after fevers, and equally point out the brain as the ſeat of morbid affection. Hence the extreme irritability of mind, impaired memory, and ſometimes complete fatuity, ſo often conſequent on fever.

Galen *(lib. de diff. Symp.)* relates, on the authority of Thucydides, that thoſe who recovered from the plague of Athens had forgotten every thing, even their own names. Huxham remarks of the *ſlow nervous fever*, that perſons who eſcape the grave often degenerate into mere idiots. *(Eſſ. on Fev.*, p. 88.) Dr. Ruſh mentions ſome ſtriking inſtances of mental imbecility obſerved during the convaleſcence from the fever which raged at Philadelphia in the years 1793 and 1797. His friend Dr. Caldwell, when recovering from the fever of the latter year, became fond of boyiſh amuſements, ſuch as playing with a bow and arrow; and Dr. Fiſher, during his convaleſcence from the fever of 1793, found the ſame kind of pleaſure in looking over the pictures of a family Bible, that he did when a child. "However unintereſting theſe facts now may appear, the time will come," ſays Dr. Ruſh, "when they may probably furniſh uſeful hints for completing the phyſiology and pathology of the mind"—that they illuſtrate in a high degree both the ſeat and nature of fever, is, I think, incontrovertible.

On the other hand, fever has been found, in many inſtances, a remedy for other diſeaſes originating in the brain, as palſy, epilepſy, &c.; thus manifeſting its influence on the ſtate of this organ.

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Enough has been ſaid, I truſt, to render it at leaſt probable, that the brain is the chief and primary ſeat of fever, and that the derangement which takes place in the functions of this organ is the ſource of the principal phenomena, or pathognomonic ſymptoms, which eſpecially characterize the diſeaſe; and, finally, that the diſturbance obſerved in the reſt of the ſyſtem is in all caſes ſecondary, and depends on the different excitability of different parts, and their more or leſs intimate connexion with and dependence on the ſenſorium. It remains to inquire into the nature of that affection of the brain which, as I ſuppoſe, conſtitutes the eſſential part of fever, or, to uſe the language of the ſchools, the *proximate cauſe* of the diſeaſe.

## CHAP. III.

### OF THE NATURE OF FEBRILE ACTION.

NO one will deny that, in fevers, the functions of the brain are greatly deranged, and that many of the moſt formidable ſymptoms of the diſeaſe may be referred directly to this ſource. I have given my reaſons above for believing that the affection of the powers of ſenſation, thought, and voluntary motion, ſo remarkable in fevers, is not merely an accidental or caſual occurrence, but eſſential to and characteriſtic of the diſeaſe; that it exiſts, in greater or leſs degree, in every caſe of idiopathic fever, while other parts of the ſyſtem that are leſs immediately ſubjected to the influence of the brain, as the organs of the vital and natural functions, are by no means neceſſarily or conſtantly deranged in fever; and that, when they are ſo, the derangement is neither uniform in kind, nor at all proportioned to the violence and danger of the diſeaſe.

I ſhall next proceed to ſhew, that the diſorder of the brain which takes place in fever is either a ſtate of actual inflammation, or, at leaſt, a condition nearly allied to it, as it contains the moſt eſſential characters of this affection. This will appear alike probable, whether we conſider the phenomena of the diſeaſe, the cauſes, or the effects of remedies; and we ſhall afterwards ſee, that the opinion derives all the ſupport from the diſſection of bodies dead of fever, that could reaſonably have been expected.

### Sect. I.---*Of the Analogy between the Phenomena of Fever and thoſe of Inflammation generally.*

IF we examine the phenomena of fever by the ſame teſts that we judge of the preſence of inflammation any where in the ſyſtem, we ſhall be ſtruck with the great analogy which ſubſiſts between the two affections. The moſt ſtriking characters of inflammation, as obvious to our ſenſes and to the feelings of the patient, are the following: " Preternatural heat and redneſs; tumour; pain, often of a pulſative kind." To theſe may be added, increaſed ſenſibility, extending to ſome diſtance into the ſurrounding parts. Theſe ſymptoms ſufficiently characterize inflammation, as ſeated externally. When the diſeaſe affects internal parts, other ſigns muſt be reſorted to, by the help of which we are, in moſt caſes, enabled to detect its preſence.

If, for inſtance, a patient complain of pain, internally ſeated; if the pain be conſtant, at leaſt without perfect intermiſſions;

if it be attended with a ſenſation of heat; and eſpecially if an unuſual pulſation be felt in the part; there are ſtrong grounds for ſuſpecting the exiſtence of inflammation. But if to theſe be added, a general increaſe of heat in the ſyſtem, preceded by, or alternating with, rigors; heat and dryneſs of the ſkin, with thirſt and foulneſs of the tongue; if the urine be ſcanty and high coloured; in a word, if the excretions in general be diminiſhed, and the action of the heart and arteries increaſed, either in force or frequency; ſuch ſymptoms, or even the greater part of them, ſhew clearly and unequivocally the preſence of inflammation in ſome internal organ*.

In order to determine the ſeat of the inflammation, or the part immediately affected, we examine the ſituation of the pain complained of; and inquire whether the organs naturally ſeated thereabouts, perform their functions in a proper manner. An examination of other organs, likewiſe, which, though remotely ſituated, have yet a natural ſympathy or connexion with the pain-ed part, often aſſiſts materially in forming the diagnoſis. By an attentive conſideration of theſe different points, it is rarely that we fail to diſcover the actual ſeat of diſeaſe. To illuſtrate this by an example—A perſon complains of pain in the back or loins. In order to determine whether the diſeaſe be a nephritic affection, or ſimply rheumatiſm, the particular ſeat of pain is inquired into, and the ſtate of the urinary ſecretion. If ſtill a doubt ſhould remain, it is generally removed by attending to the ſtate of the ſtomach, which, we know, is commonly affected with nauſea and vomiting in diſeaſes of the kidney, but not where the muſcles of the back, or their covering, is the part affected. And further, ſhould the pain be of a continued kind; the ſkin of the patient hot; the tongue dry and furred; and the pulſe preternaturally quickened; we have every proof the caſe admits of, that the diſeaſe is founded in inflammation.

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* The ſigns, according to Van Swieten, by which we judge of the exiſtence of internal inflammation are, pain of a diſtenſile kind, increaſed heat, and a ſenſe of throbbing, with fever.—*Com. in Aph.*, 772.

Applying the teſt now mentioned to fever, the juſtneſs of the concluſion which I have ventured to draw, will, I think, be evident. A patient labouring under fever never fails to refer to the head as the chief ſeat of pain or uneaſineſs, provided his ſenſes remain unimpaired. " He is unable to hold up his head;" or, "his head is ready to ſplit;" are the uſual modes of expreſſion on this occaſion. The pain is commonly of the throbbing kind; and the carotids, both in the temples and in the neck, are ſeen to pulſate ſtrongly. The eyes are generally more or leſs ſuffuſed, and the whole face is redder than natural; all, circumſtances pointing out an increaſe in the force of circulation in the veſſels of the head.

That the pain and throbbing felt in the head in fever depend upon actual diſeaſe or inflammation going on in the brain, and not upon ſimple increaſed determination of blood towards the part, is clear, I think, from this conſideration: that where the blood is driven forcibly to the head by the uſe of intoxicating liquors, by paſſion, or other cauſes, the ſymptoms mentioned above are not immediately perceived, though there are the moſt unequivocal marks of increaſed circulation in the veſſels of the brain. This ſtate of increaſed vaſcular action is not properly diſeaſe, but in general ſubſides after a few hours, leaving the perſon in health. It is only in caſes where the irritation is carried ſo far, or continued ſo long, as to excite actual diſeaſe in the brain (as in thoſe who are unaccuſtomed to debauchery) that the *painful throbbing* of the arteries is complained of: this it is that ſhews the inflammatory action to have begun in the brain, and it ſoon begins to be accompanied with the general ſymptoms denoting the preſence of inflammation in the ſyſtem. Like many other parts, the brain is inſenſible in the healthy ſtate, but feels acutely when under inflammation: hence in fever every ſtroke of the arteries is dreadfully felt, and the patient is in conſtant fear of the burſting of the veſſels.

Along with theſe ſymptoms, the whole head is preternaturally hot, not only to the feelings of the patient himſelf, but when tried with the thermometer; as I have repeatedly aſcertained, particularly in the fevers of children. This increaſe of heat in the head is often perceivable, though the reſt of the body be cold. "It is very common," ſays Huxham, "for the face to be in a heat, while the extremities are quite cold*." I know of no inſtance where the reverſe of this takes place in fever, that is, where the head is cold while the body is hot: the head is preternaturally hot even while the patient is ſhuddering under the cold fit of an ague, and although the features of the face may appear ſhrunk with coldneſs and contraction, as I know by experience. And, with regard to continued fever, Dr. Fordyce, remarking on the inequality of heat in different parts of the body, obſerves, that when the patient has felt himſelf univerſally cold, the heat, as meaſured by the thermometer, has frequently been found 105° under the tongue*. This ſhews an increaſed evolution of heat in the veſſels of the head, one of the moſt unequivocal ſigns of topical inflammation.

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* Eſſay on Fevers, chap 7. "Sæpe dum caput ardet, pedes frigeſcunt."—Selle *Rudim. Pyretologiæ. cap. de ſebre lenta nervoſa.* 8vo, p. 318.

With reſpect to increaſed ſenſibility, which makes a part of the character of inflammation, this alſo belongs to fever, and is in general very ſtriking in the organs of ſenſe, which ſo immediately depend on the brain for the due performance of their functions. In the early ſtage of moſt fevers, the ſenſes become exceedingly acute. Hence the impatience of light, ſound, taſtes, and odours, which moleſts the ſick, together with pains over the whole body. In South Carolina, as we learn from Chalmers, fevers are very frequently obſerved with the following characters. "The eyes are dull and watery,

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* *Diſſert.* 1, p. 223.

“ as in thoſe who are in deep affliction or
“ deſpair*; and ſometimes theſe organs are
“ ſo very acutely ſenſible, that light,
“ though it be not glaring nor ſtrong, gives
“ great pain. The organs of hearing are
“ equally irritable; for any ſmall or unex-
“ pected noiſe will cauſe the patient to
“ ſtart in a fright, and breathe anxiouſly
“ for ſome time, the pulſe being then ir-
“ regular and much quickened: and indeed
“ the whole nervous ſyſtem is now ſo ſuſ-
“ ceptible of the ſmalleſt impreſſions, that
“ whatever taſtes or ſmells diſagreeably
“ will excite nauſea or vomiting, accelerate
“ reſpiration, and cauſe anxiety. Only
“ touching any part of the patient's ſkin,
“ without firſt apprizing him of it, will
“ much alarm him†.”—The hiſtory of fever in general, at its commencement, cor-

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* There is ſomething in the appearance of the eyes which is ſtrongly indicative of fever, though it is not eaſy to define in what it conſiſts. The dulneſs and ſuffuſion of the eye has been remarked by moſt authors. This is not ſurprizing, when it is conſidered that while the face and external parts of the head are chiefly ſupplied with veſſels from the external carotids, the eyes receive veſſels beſides from the internal; they thus ſerve in ſome meaſure to point out the ſtate of vaſcular action within the head. “ Oculi,” ſays Duretus, “ ſocietatis et vicinitatis jure, præ cæteris cerebri afflictionem denotant.”

† *Chalmers's* Diſeaſes of South Carolina, 8vo, p. 170.

reſponds in a great meaſure with the deſcription now given.

Exceſſive ſenſibility to impreſſion in the organs of ſenſe, is reckoned among the moſt unequivocal marks of inflamed brain; and it probably has no other origin when it occurs in fevers. It is no argument againſt this, that the oppoſite ſtate of torpor is ſometimes obſerved to pervade all the functions in fever. “ In ſultry weather,” ſays the author juſt quoted, “ towards the end “ of ſummer, nervous and putrid fevers are “ apt to ariſe, ſometimes accompanied at “ the beginning with ſomnolency, or an “ apoplectic ſtate, which indicates much “ danger, though it may go off with the “ paroxyſm, and its return be prevented “ by the bark*.” Theſe ſymptoms are unqueſtionably the effect of compreſſion of the brain, ariſing from an increaſed impetus of blood towards this organ, and therefore afford a confirmation of the doctrine here advanced. The ſame thing is very remarkable in hydrocephalus, where the torpor ſucceeds to a previous ſtate of great irritation: it has alſo been obſerved in phrenitis, and a peculiar denomination accordingly aſſigned to this variety of the diſeaſe, viz., *typhomania.*

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* *Chalmers*'s Diſeaſes of South Carolina, 8vo, p. 150.

There is perhaps no ſymptom which more ſtrongly indicates an inflammatory action to be going on in the ſyſtem, than a dry and furred tongue. This was well known to Baglivi, an accurate obſerver of the phenomena of diſeaſes. "Great reliance," ſays he, "is to be placed upon the ſtate and changes of the tongue in the detection of diſeaſes; other ſigns frequently deceive us, theſe ſeldom or never. We ſhould be careful, therefore, never to leave a patient without inſpecting the tongue, *eſpecially if there be any ſuſpicion of internal inflammation*, which the tongue points out with certainty; for on the leaſt appearance of inflammation, the tongue begins to get dry, and the dryneſs increaſes in proportion as the inflammation increaſes*."—The application of this to fever is obvious.

The precurſory ſymptoms are the ſame in fever as in topical inflammations of other important organs. They are both frequently uſhered in by coldneſs and rigors, to which ſucceed the ſymptoms of re-action, as they are termed, heat, thirſt, dry and foul tongue, accelerated pulſe, and ſuppreſſion of excretions,—ſymptoms which ordinarily accompany inflammation, whatever be its ſeat, provided the heart and general vaſcular ſyſtem ſympathize with it; an effect that takes place much ſooner when certain organs are inflamed than others, and which alſo depends much upon the previous ſtate of the patient, in regard to ſtrength and irritability.

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* "Magna fides linguæ affectibus et mutationibus adhibenda in morborum cognitione; reliqua enim ſigna frequenter fallunt, hæc aut nunquam aut rarò. Cave igitur ne diſcedas ab ægro in cujuſcunque morbi curatione, niſi prius linguam inſpexeris, præſertim ſi de internis inflammationibus ſuſpicio fuerit, quas tibi certiſſime explorabit lingua; utpote quæ in minima inflammationum ſuſpicione, ſtatim reſiccari incipit, et creſcente inflammatione, creſcit pariter et ſiccitas linguæ."—Baglivi *Prax. Med.*, c. 13, § 4.

The acceſſion of fever is often preceded by an unuſual feeling of health and ſprightlineſs. It was remarked of a certain patient of naturally a ſluggiſh underſtanding, that on the attack of a febrile diſorder his conceptions were raiſed in a manner far above what was cuſtomary to him in health.—Van Swieten mentions a ſimilar fact. "Vidi et ingenii acumen auctum in ſingulis paroxyſmis febris intermittentis*." Theſe circumſtances, trivial as they may ſeem, furniſh an indirect proof of the nature of the diſeaſe. The firſt and ſlighteſt degree of inflammatory action heightens the ſenſibility of an organ, and enables it to perform

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[*] *Com. in Aph.*, 560.

its functions with augmented vigour: this is the natural effect of that excited vaſcular action which makes an eſſential part of the character of all inflammations. It is only in the further progreſs of the diſeaſe, when the part becomes oppreſſed and ſuffocated, as it were, by the violent action of its veſſels, and the conſequent effuſion into its ſubſtance, obſtructing and impeding the proper action of the individual component parts of the organ, that its functions become impaired, or wholly obliterated.

## Sect. II.---*Of the State of the Blood in Fever and in Inflammation.*

SIMILAR to what uſually takes place in other inflammations, the blood, in many fevers, ſhews, when drawn, the inflammatory cruſt or buff on its ſurface. This appearance is not peculiar to any one form of the diſeaſe, but is occaſionally obſerved, in fevers of widely different characters. In what are called inflammatory fevers, and in vernal intermittents, it is a very frequent occurrence. It has been often obſerved, likewiſe, in malignant fevers at their commencement, and even in the plague itſelf*: in thoſe fevers, for inſtance, where, towards the end of the diſeaſe, the craſis of the fluids appears broken down, and a great tendency to putreſcency comes on.

The abſence of the inflammatory cruſt on the blood, in many caſes of fever, is eaſily accounted for, and affords no argument againſt the exiſtence of inflammation in this diſeaſe; for the ſame thing occurs occaſionally in other inflammations, even in thoſe of the moſt acute and dangerous kind. In violent peripneumony, for example, the blood is tranſmitted with difficulty through the lungs, and the left ſide of the heart, in conſequence, does not receive its uſual ſupply of that fluid, which becomes accumulated in the great veins of the heart, impeding the free return of blood from the head by the jugulars, and thus producing diſtenſion of the veſſels of the brain and conſequent ſtupor. In this caſe, the pulſe neither beats ſtrong, hard, nor full, as in many other acute inflammations of theſe parts, nor is the blood when drawn obſerved to be covered with the ſame buffy coat: the diſeaſe, indeed, aſſumes altogether a new appearance, and, there is reaſon to believe, has often in this ſtate been miſtaken for aſthma, or other chronic affection of theſe organs.

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* *Frank* de Curat. Morb. Hum., tom. i, 185; and *Sydenham* de Morb. Acut., ſect. 2, cap. 2.

## Sect. III.---*Of the exciting Cauſes of Fever, as compared with thoſe of Inflammation.*

THE exciting cauſes of fever are, many of them, the ſame with thoſe which produce inflammation in other parts. Thus heat, cold, and ardent ſpirits, which are reckoned among the occaſional cauſes of fever, are likewiſe powerful agents in inducing inflammation. And we have ſeen that fever may be ſuddenly excited by external violence inflicted directly on the brain*.

The ſpecific cauſes of fever all ſhew a tendency to excite inflammation in ſome part or other of the ſyſtem: this is obſervable in plague, ſmall-pox, meaſles, angina maligna, ſcarlatina, influenza, and others which will readily ſuggeſt themſelves to the mind of the reader. Even in thoſe fevers where external inflammation makes no eſſential part of their character, as in ſimple idiopathic fever, there is nevertheleſs obſerved a ſtrong diſpoſition to inflammation in the ſyſtem, as it is very frequently found to ariſe during their courſe, and often adds to the danger and fatality of the diſeaſe. Thus in cold and temperate climates, fever is often accompanied with catarrh or pulmonic inflammation; while, in tropical regions, nothing is more common than for inflammation of the ſtomach, inteſtines, or biliary organs, to come on in the progreſs of fever, altering materially the form of the diſeaſe, and giving to it a particular character and denomination. Hence proceed the black vomiting, jaundice, bloody ſtools, and tormina, which are ſuch frequent concomitants of the *yellow* fever, and which ſeem more frequently to deſtroy the patient, than the fever itſelf.

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* See page 87.

## Sect. IV.---*Of the Way in which the Cauſes of Fever may be ſuppoſed to produce their Effect on the Brain.*

THE mode in which the various exciting cauſes act on the brain in inducing fever is a queſtion of much difficulty. Many changes, probably, intervene between the application of the remote cauſe and the ultimate effect, or production of diſeaſe; but what theſe changes are, is ſcarcely within the reach of inveſtigation.

The occaſional cauſes of fever may be diſtributed into three claſſes—1ſt, thoſe which act through the medium of the mind, as the mental paſſions and emotions: 2dly, thoſe which may be ſuppoſed to act by irritation; as cold, irritating and indigeſtible matters in the *primæ viæ*, teething in infants, wounds, inflammation, &c.: and, 3dly, ſuch as are capable of aſſuming an independent material form; as the different contagions, marſh miaſmata, putrid effluvia, &c.; theſe may either be ſuppoſed to act on the extremities of the nerves to which they are firſt applied, or to be taken into the ſyſtem by abſorption, producing their effect by direct application to the brain itſelf, or its veſſels.

It is plain that the two firſt ſets of cauſes above mentioned produce their effect independently of any immediate application to the brain itſelf; and there is the leſs difficulty, therefore, in ſuppoſing that the reſt may do the ſame.

It is certain that the condition of the brain may be very powerfully and ſuddenly influenced by applications to remote parts of the body. Thus fainting, or a total loſs of ſenſe, is often inſtantaneouſly induced by the action of certain odours and effluvia on the organ of ſmell; while it may be as ſuddenly again removed by applications of a different kind.

Alkohol, opium, laurel-water, and ſome other vegetable poiſons, kill almoſt inſtantaneouſly, when taken into the ſtomach in large quantities; and the bites of certain venomous reptiles prove fatal almoſt as ſoon as inflicted. Opium deſtroys the energy of the brain, inducing general paralyſis, by being thrown into the cavity of the abdomen in frogs, nearly as ſoon when the heart is removed as when the animal is entire*. The effect in this caſe muſt be produced through the intervention of nerves.

The ſurfaces on which the nerves of the organs of ſenſe are expanded are more eſpecially ſuſceptible of external impreſſions, and, when ſtimulated, more powerfully influence the ſtate of the brain, than other parts that are leſs plentifully furniſhed with nerves. It appears from the experiments of the late illuſtrious Dr. Black, that carbonic acid gas kills more ſpeedily if inhaled through the noſtrils, than if taken immediately into the lungs through the mouth only. "I diſcovered," he ſays, "that this particular kind of air, attracted by alkaline ſubſtances, is deadly to all animals that breathe it by the mouth and noſtrils together; but if the noſtrils were kept ſhut, I was led to think that it might be breathed with ſafety. I found, for example, that when ſparrows died in it in ten or twelve ſeconds, they would live in it for three or four minutes, when the noſtrils were ſhut by melted ſuet." This ſeems to ſhew, that the olfactory nerves are more ſuſceptible of impreſſion than thoſe diſtributed on the ſurface of the bronchia and lungs, and is what, indeed, might have been expected to take place, conſidering the abundance of nerves with which all the organs of ſenſe are ſupplied, and their proximity to, and immediate dependence on, the brain.

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* See the Experiments of Whytt, Monro, and others.

In other caſes, the inhalation of carbonic acid gas, and of various other noxious effluvia, produces inſtant headach in many perſons, attended with a violent throbbing of the veſſels of the head. " A phrenzy or delirium," ſays Dr. Lind, " is often the firſt and immediate effect of a bad air*." Some of the gaſes, when inſpired in a highly concentrated ſtate, kill almoſt inſtantaneouſly before they could poſſibly have found their way into the general circulation. And it has been often obſerved, when the plague has been raging with great violence, that perſons expoſed to the contagion have dropped down ſuddenly, as if ſtruck by lightning, and have died in a ſhort time†.

Theſe inſtances ſufficiently prove, that different noxious effluvia can exert their full action on the ſyſtem without being taken into the maſs of blood; there is no neceſſity, therefore, for ſuppoſing infectious miaſmata to be abſorbed. They may act on the brain through the medium of the mouth, noſtrils, lungs, ſtomach, or ſkin, with all of which they muſt come in contact. Whether they actually do ſo in all caſes, or in any, or whether they are in ſome inſtances abſorbed, and carried into the ſyſtem, it is difficult to determine; but in either caſe their action is probably exerted on the ſentient extremities of nerves; in the latter caſe, on thoſe diſtributed on the internal coats of the blood-veſſels; in the former, on thoſe of the general ſurface of the body, or of the cavities which open externally.

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* Lind on Hot Climates, p. 176.

† " Primis menſibus quibus graſſabatur peſtis, nullo ferè non die ejus contagio afflati, dum in triviis verſarentur, inopinantes extincti ſunt, nihil prorſus mali præſentientes." —Sydenham *de Morb. Acut.*, ſect. 4, cap. 3.

In the application of certain infectious matters to the body, as of the variolous or ſyphilitic virus, we are apt to imagine that we can trace the progreſs of the poiſon into the ſyſtem ſtep by ſtep. Firſt, no effect is perceived for ſeveral days; then the punctured part becomes inflamed, and the inflammation can be often traced along the courſe of the abſorbent veſſels to the next lymphatic gland, which itſelf becomes enlarged and painful, as if acted upon by the preſence of a foreign ſtimulus; and, after all this, follows the conſtitutional affection. Hence we are accuſtomed to conſider the abſorption of the poiſon in theſe caſes as almoſt a matter of demonſtration. This concluſion, however, upon attentive conſideration, will ſcarcely be found to be warranted.

In the firſt place, the ſame phenomena ſometimes preſent themſelves, where no peculiar matter has been applied; as when the ſkin is punctured by a thorn, or a clean poliſhed inſtrument, as a needle or the like. The induration of the lymphatics, and of the gland above, can only be aſcribed in this caſe to the communication of inflammation through a ſeries of parts of ſimilar organization and function; circumſtances which we know, from general obſervation, to be the foundation of an intimate ſympathy between different and diſtant parts.

In the next place, upon the principle of abſorption, it is difficult to account for the poiſon lying ſo long a time in the part to which it is at firſt applied, and for this time being ſo unequal with regard to different poiſons:—a freſh wound is known to be a good abſorbing ſurface with regard to other applications. Nor does the idea of abſorption at all enable us to underſtand various other circumſtances attending infection. It does not explain the ſtrongly-marked difference between the caſual and inoculated ſmall-pox; nor the limited action of the variolous and other poiſons in the ſyſtem. If abſorption of theſe poiſons were neceſſary in order to their action, the general diffuſion which they muſt neceſſarily undergo might be expected to produce a more general effect than is actually obſerved. *Quantity*, likewiſe, might be ſuppoſed to influence the event; which, however, does not ſeem to be the caſe.

What has been juſt ſtated I do not by any means conſider as proving inconteſtibly that contagious matters are not abſorbed previous to their acting on the general ſyſtem; it only ſerves to ſhew, that the contrary has been aſſumed rather than demonſtrated; and, therefore, that we ought to be cautious in employing it as a baſis of future reaſoning, particularly in regard to the treatment of diſeaſes.

## Sect. V.---*Of the Alternation of Fever with Inflammation.*

FEVER is frequently obſerved to alternate with inflammation; and as one inflammation is often removed by the acceſſion of another, ſo fever and inflammation in many caſes prove reciprocally a remedy for each other. Thus in eryſipelas, and other external inflammations, metaſtaſis, as it is called, not unfrequently takes place to the brain, and idiopathic fever enſues; and, on the other hand, fever is ſometimes terminated critically, in conſequence of inflammation ariſing in ſome external part of the body.

Both fever and inflammation often go off ſpontaneouſly upon hæmorrhage, diarrhœa, or other *critical* diſcharges, taking place. They agree, likewiſe, in this reſpect, that, when once excited, they are both in a great meaſure independent of the cauſe which firſt produced them, and continue their progreſs according to certain laws of the œconomy, with ſimilar tendencies to terminate at ſome certain periods, rather than at others. This has been obſerved with regard to inflammations occurring in warm climates, as in Greece and Italy: after a certain number of days, they either ſhew a diſpoſition to go off altogether, or terminate in ſuppuration; while in cold climates, neither fever nor inflammation is governed by ſuch regular laws. The analogy in theſe reſpects between fever and inflammation, affords no weak argument in favour of a ſimilarity in the nature of the two affections.

## Sect. VI.---*Of the Analogy between Fever and Inflammation, in regard to the Cure generally.*

IT is a remark as old as Hippocrates, that the nature of a diſeaſe may be known in a great degree from the remedies which are found to cure it. The natural progreſs and termination of fever and of inflammation are in moſt reſpects alike. Both diſeaſes make their attack with ſimilar ſymptoms, as before obſerved; proceed with gradually increaſing ſeverity to their height, and then gradually decline; or elſe they terminate more abruptly, by a critical and ſpontaneous evacuation, or by metaſtaſis to ſome other part. This may be called the natural cure, and takes place equally in fever and in inflammation.

The artificial means of cure are alſo in a great meaſure eſſentially the ſame. Thus blood-letting, vomiting, ſweating, purging, and bliſtering, are the principal remedies that have been employed with effect to carry off both fever and inflammation. In both caſes, if employed very early in the diſeaſe, and to a conſiderable extent, they have, in numberleſs inſtances, cut ſhort their progreſs; while, if later had recourſe to, their power, both in fever and inflammation, is uncertain, and their uſe ſometimes hurtful. In theſe reſpects there is the moſt perfect agreement between the two diſeaſes. On the other hand, it is ſometimes neceſſary to increaſe the violence of an inflammation, by ſtimulating remedies, in order the ſooner to effect a cure; a practice that is no leſs applicable in fever, which is often brought to a criſis by remedies of a ſtimulating kind*.

The application of cold, which has of late been uſed with ſo much ſucceſs in arreſting the progreſs of fevers in their early ſtages, there is great reaſon to believe, is no leſs capable of cutting ſhort many topical inflammations. In ileus, an affection that often, probably, depends upon inflammation of the inteſtines, the ſudden affuſion of cold water, or ſtanding on a cold and damp floor, has almoſt inſtantaneouſly produced a ſolution of the diſeaſe. The ſame remedy has often cured ſuppreſſion of urine, that appeared to depend on an inflamed ſtate of the kidneys. And we have even inſtances of pneumonic inflammation being cured by ſimilar means.

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* "Eſt circumſpecti quoque hominis, et novare interdum, et augere morbum, et febres accendere; quia curationem. ubi id quod eſt, non recipit, poteſt recipere id quod futurum eſt."—*Celſ.*, lib. 3, c. x.

Dr. Smollet mentions, in his *Travels*, his having made an experiment of this kind upon himſelf with ſucceſs. "In conſequence of a cold caught in France," he ſays, "I was ſeized with a violent cough, attended with fever and ſtitches in my breaſt, which tormented me all night long without ceaſing; at the ſame time I had a great diſcharge by expectoration, and ſuch a dejection of ſpirits as I never felt before. In this ſituation I took a ſtep which may appear to have been dangerous: I knew there was no impoſthume in my lungs, and I *ſuppoſed the ſtitches were ſpaſmodical*: I was ſenſible that all my complaints were originally derived from relaxation; I therefore hired a chaiſe, and going to the beach, about a league from the town, plunged into the ſea without heſitation. By this deſperate remedy, I got a freſh cold in my head, but my fever and ſtitches vaniſhed the very firſt day; and, by a daily repetition of the bath, I have diminiſhed my cough, ſtrengthened my body, and recovered my ſpirits."---Notwithſtanding the Doctor's opinion of the ſtitches being *ſpaſmodical* and derived from *relaxation*, few at preſent, probably, will heſitate to conſider the caſe as an inſtance of pulmonic inflammation cured by early recourſe to the cold bath. The following is ſtill more in point.

Dr. Blane, author of the *Treatiſe on Diſeaſes of Seamen*, in a paper giving an account of a remarkable hurricane which occurred at Barbadoes in the month of October 1780, and publiſhed in the *Tranſactions of the Royal Society of Edinburgh*, vol. I, obſerves, " that it had a viſible good effect on the diſeaſes of the climate, fevers and fluxes. Chronic diarrhœas, the conſequence of dyſenteries, were alſo cured by it. But the diſeaſes on which it operated moſt viſibly and ſenſibly were *pulmonic complaints*. Some recent caſes of phthiſis, and even the acute ſtate of pleuriſy, were cured by it. Nay, in the more advanced and incurable ſtate of phthiſis, the hectic fever was in a great meaſure removed, and a temporary alleviation at leaſt procured." He mentions particularly the caſe of a lady of his acquaintance, who was ill of a pleuriſy at the time of the hurricane, and paſſed more than ten hours in the open air, ſitting generally in a plaſh of water from the rain that fell: ſhe felt afterwards no more of her complaint, nor had any return of it.

Bloodletting is perhaps the moſt powerful and generally applicable remedy for inflammation, that we are in poſſeſſion of, and I believe it will turn out to be ſo with regard to fever alſo; yet there are in both caſes numerous exceptions to its uſe. In ſome varieties of inflammation, and in certain ſtates of the ſyſtem, it is well known that bloodletting cannot be employed with advantage, but is ſuperſeded by remedies of an oppoſite character. So it is, alſo, with regard to fever: the diſeaſe has been cured in innumerable inſtances by loſs of blood, both artificial and ſpontaneous; whilſt in many of its varieties, ſuch treatment appears to be inadmiſſible. This ſubject will be further conſidered hereafter.

Opium, as a remedy, appears to be ſubject to the ſame reſtrictions in the cure of both inflammation and fever. When the phlogiſtic diatheſis (which may be defined, an accelerated and more violent action of the heart and arteries in a ſtrong habit) accompanies either fever or inflammation, opium is at beſt a doubtful remedy, and is often manifeſtly injurious. In the oppoſite circumſtances, where, for example, the ſtrength of the patient has been reduced by previous evacuations, or protracted diſeaſe, opium deſervedly ranks with the moſt uſeful remedies, both in fever and in inflammation. To this it may be added, that when the diſeaſe recurs by paroxyſms, which happens in many inflammations as well as in fevers, the recurrence is frequently put a ſtop to by bark and other remedies of ſimilar powers.

In ſhort, in whatever light we view the ſubject, we cannot but be ſtruck with the great ſimilarity that obtains between inflammation and fever. Inflammation, like fever, is ſeldom ſtationary, but is generally either increaſing or diminiſhing. It has its periods of acceſſion, and of increaſe; its acmé, and its decline. It may, like fever, terminate quickly by ſweating, hæmorrhage, or other critical evacuation; or it may go off gradually. It may be cured by bloodletting, but under the ſame reſtrictions that determine the propriety of this evacuation in fever. The general regimen is the ſame in both diſeaſes, and conſiſts chiefly in avoiding all unneceſſary irritation. The beſt palliative remedies during their courſe, are ſuch as excite a moiſture on the ſkin, and keep the bowels free from accumulation. Opium, in inflammation as in fever, is generally improper in the height of the diſeaſe, but advantageous in the decline. Bliſters and other topical applications oftener relieve, than at once remove the diſeaſe, whether fever or inflammation.---In all theſe reſpects, the analogy between them is cloſe and ſatisfactory.

On the other hand, the differences that are obſerved between fever and ordinary caſes of inflammation may be readily explained, by the diverſity of ſtructure and functions in different parts, and the different laws to which they are, in conſequence, ſubjected. The difference, in fact, is not greater than is found to occur between one inflammation and another, as varied by ſeat, cauſe, and individual conſtitution. We obſerve one part, when inflamed, running rapidly to diſorganization, or death; another, readily ſuppurating; a third, continuing in the inflamed ſtate, with little change, for a conſiderable length of time. One part when inflamed deranges the general functions of the ſyſtem by ſympathy, while another is ſtrictly local in its effects. Sometimes the *inflammatory diatheſis* takes place, characterized by a full, ſtrong, and tenſe pulſe; at another, general irritation of a different kind, with a pulſe contracted, hard, and feeble. Equal varieties are produced even by the ſame organ, according as the inflammation is ſeated in particular parts of it; as might be inſtanced in the lungs, the liver, &c. In ſhort, when we reflect, that inflammation of the brain, like that of other organs, may vary in regard to its particular ſeat, extent, degree, and termination; in regard to the conſtitution in which it ariſes; and perhaps, alſo, the ſpecific cauſe inducing it; we ſee an ample and ſufficient ſource for all the varieties that are ever obſerved to take place in fever; as will appear more clearly hereafter, when we come to treat of them in detail.

## Sect. VII.---*Of Prediſpoſition to Fever, as indicating the Nature of the Diſeaſe.*

MANY circumſtances attending the prediſpoſition to fever ſeem to ſhew, that it partakes of the nature of inflammation.

Some perſons are more diſpoſed to fever than others, juſt as is obſerved with regard to other inflammations. I have known inſtances of perſons who have had regularly, for ſeveral years in ſucceſſion, an attack of inflammatory fever in the ſpring, unaccompanied by any topical inflammation (unleſs in the brain), and which commonly terminated within eight days by the uſe of moderate bloodletting, and the common antiphlogiſtic regimen.

The prediſpoſition to fever, of different kinds, appears to be ſtronger in perſons of vigorous habits, and who live intemperately and luxuriouſly, than in thoſe of an oppoſite deſcription. The diſeaſe in ſuch, too, is commonly more acute and dangerous, and more quickly terminates fatally. This, though undoubtedly true with regard to violent or malignant fever, is contrary to the common opinion in reſpect to typhus, which is generally ſuppoſed to attack, in preference, the feeble and debilitated, and to be of more difficult cure in theſe. As a general rule, this opinion is not, as far as my own obſervation goes, well founded; and it is controverted, likewiſe, by the experience of ſome of the beſt writers on the ſubject. One obvious ſource of fallacy here may be mentioned; which is, that women and others of infirm conſtitutions, are, from their more frequent employment in domeſtic offices, neceſſarily more expoſed to contagion than others, and ſo may ſeem more liable to be attacked by fever. Infirm people are, indeed, often obſerved to be prone to diſeaſe*;—not, I think, to diſeaſes generally or indiſcriminately, but to diſeaſe of ſome particular organ, different in different individuals, and which, from original ſtructure or acquired diſpoſition, is preternaturally irritable, and conſequently diſpoſed to be thrown into irregular action from trivial cauſes. Thus ſome have tender lungs, others irritable bowels, &c.; and it

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[*] "Omnibus morbis obnoxia maximè infirmitas eſt."—*Celſ.*, lib. i, c. 3.

is not unlikely that an equally irritable ſtate of brain may exiſt in many infirm people, rendering them in a peculiar manner ſubject to the attack of fever. But in general it has appeared to me, that men are at leaſt as ſuſceptible of typhus as women, if equally expoſed to contagion, and that the diſeaſe in them is more violent, and attended with greater danger.

On the other hand, temperance, and even ſtrict abſtinence with regard to the uſual modes of living, have, in numberleſs inſtances, in times of peſtilence and contagion, proved ſovereign preſervatives; and, when the prevailing diſeaſe has occurred under ſuch circumſtances, it has been rendered comparatively mild and ſafe. In hot climates, negroes, women, water-drinkers, and others who obſerve great temperance of living, are far leſs ſubject to be attacked by the endemic fever of the country, than thoſe in the reverſe circumſtances. The Frenchman, who lives much on vegetables, and drinks ſparingly of ſtrong liquors, eſcapes much better the ravages of the yellow fever, than the Engliſhman, who eats and drinks as he had been accuſtomed to do in northern regions. *Timoni*, in his account of the plague at Conſtantinople, obſerves, that the Armenians, who live chiefly on vegetable food, were far leſs diſpoſed to the diſeaſe than other people*. M. *Deſgenettes* obſerves, with regard to the plague or peſtilential fever in Egypt, that women, young perſons, and infants at the breaſt, eſcaped infection more than the moſt robuſt men†. Of the plague at Moſcow De Mertens obſerves, " that the young and robuſt were more liable to become infected than elderly and infirm perſons; pregnant women and nurſes were not ſecure from its attacks. Children under four years of age were much leſs readily infected, but, when they were, they exhibited the worſt ſymptoms."

" Almoſt all the firſt victims of the yellow fever," ſays Dr. Dryſdale, " were perſons habituated to the immoderate uſe of ardent ſpirits; and it is a melancholy truth, that very few of theſe unfortunate creatures could be reſcued from death by all the powers of medicine."—" In drinkers of ardent ſpirits, the fever was excited not only with more facility, but was attended alſo with almoſt irreſiſtible violence and malignity. Even a moderate but unuſual indulgence in theſe liquids ſoon rouſed the diſeaſe into action. A glaſs of wine would occaſion a headach in thoſe who were much expoſed to the exhalations of the ſick, or to the air of infected places; and for a conſiderable time in September, half that quantity would affect me in a ſimilar manner*."—It is ſcarcely neceſſary to remark on the tendency of ſpirituous liquors to occaſion increaſed vaſcular action in the brain: and we ſee readily, upon the hypotheſis here contended for, a reaſon why the uſe of them ſhould both give a prediſpoſition to fever, and aggravate all its ſymptoms, at leaſt during the moſt active ſtages of the diſeaſe.

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* " Armeni omnium nationum minimè ad peſtem ſunt diſpoſiti: obſervo illos pauciſſimis uti carnibus: cepis, porris, alliis, *vinoque* maximè utuntur."

† *Hiſtoire Med. de l'Armee de l'Orient.*, p. 108.

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* See Coxe's *Med. Muſæum,* No. 1, p. 30.

## Sect. VIII.---*Of Fever as compared with the Phrenitis of Authors.*

FROM what has been now ſaid, it muſt appear, I think, at leaſt probable, that fever conſiſts eſſentially in an inflammatory action going on in the veſſels of the brain; in other words, that it is nothing more nor leſs than a ſpecies of phrenitis or topical inflammation of this organ. This will appear ſtill more evident from a compariſon of the ſymptoms, cauſes, and treatment of the two affections.

The term *phrenitis* has been ſo vaguely uſed by writers, that it is not always eaſy to aſcertain the ſenſe in which they employ it. The antients appear generally to have uſed it ſynonymouſly with delirium. The Greeks, Celſus ſays, called every delirium or alienation of mind by this denomination. In ſome of the works, however, aſcribed to Hippocrates, it obviouſly denotes more than a mere ſymptom, and is ſpoken of as a primary affection, diſtinct from delirium— " vehementi inſania detenti, tremuli, cum crebra ſputatione, metus eſt ne *phrenetici* evadant*"—here the term appears to be employed in nearly the ſame ſenſe that we uſe it at preſent, namely, to denote an acute topical affection of the brain, though it is not directly aſcribed to inflammation.

Some even of the moderns have conſidered phrenitis as an affection of the brain diſtinct from inflammation. Willis thought it depended upon a phlogoſis or inflammation of the *animal ſpirits*,—not of the ſubſtance of the brain, the inflammation of which, he ſuppoſes, would be more likely to occaſion ſoporous diſeaſes†. Selle, in his *Rudimenta Pyretologiæ*, places phrenitis among the *Atactæ* or nervous diſorders, and conſiders it as exiſting without inflammation, as proved, he ſays, by diſſection, and by the opinion of Hippocrates. In general, however, modern writers agree in conſidering phrenitis as a topical inflammation of the brain or its membranes, and it is in this ſenſe that I ſhall here employ it.

Phrenitis has by ſome authors been divided into two ſpecies, the true *(phrenitis vera)*, and the ſpurious; or the idiopathic and ſymptomatic ſpecies: the latter is univerſally allowed to accompany fever in numerous inſtances. The diſtinction here made is of little importance in regard to the nature of the diſeaſe, for whether it occurs as a primary affection, or comes on ſecondarily in the courſe of other diſeaſes, it is ſtill inflammation, and in both caſes entitled to the denomination of true phrenitis: there is no difference except as to the preceding ſtate; the ſeat of diſeaſe is the ſame in both. *Alexander Trallianus*[*] diſtinguiſhes the *phrenitis vera* from the ſymptomatic ſpecies, by ſaying that in the former the head is hotter than natural; but in all fevers there is preternatural heat of the head.

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* *Coacæ Prænotiones*, ſect. 2.

† *De Delirio*, cap. x.

Sauvages has made a two-fold diviſion of inflammation of the brain;—the *membranous*, having its ſeat in the membranes, and to which excluſively he applies the term phrenitis; and the *parenchymatous*, affecting the ſubſtance of the brain, and which he calls *cephalitis*. Similar diſtinctions have been made by other noſologiſts[†]; but Dr. Cullen obſerves juſtly, that there are no ſymptoms which ſerve to characterize one or the other of theſe excluſively; nor has diſſection eſtabliſhed any ſuch diſtinction: he properly, therefore, conſiders phrenitis, cephalitis, phreniſmus, and ſphaceliſmus, as ſynonymous, or as merely varieties of the ſame affection, not poſſible to be diſcriminated in practice[*].

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[*] Lib. 1, c. 13.

[†] Linnæus calls the inflammation of the ſubſtance of the brain *ſphacelyſmus*.

The definition of phrenitis given by Dr. Cullen, in his *Noſology*, is contained in few words.—"Pyrexia vehemens; dolor capitis; rubor faciei et oculorum; lucis et ſoni intolerantia; pervigilium; delirium ferox; vel typhomania."—If theſe characters are neceſſary to conſtitute phrenitis, it muſt be exceedingly eaſy to diſtinguiſh it, in practice, both from fever and from other affections. But it is manifeſt from the hiſtory of diſeaſes, and from the conceſſions of Dr. Cullen himſelf, that the ſymptoms above mentioned are not eſſential to phrenitis or inflammation of the brain; for this diſeaſe may be preſent although they are chiefly wanting, as proved by diſſection. Such ſymptoms denote only a particular variety of the diſeaſe, and are, therefore, not properly given as characteriſtic of the genus.

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[*] "Symptomata nulla dantur quæ ſemper phlegmaſiam cerebri a phlegmaſia membranarum ejus, ſive meningum, certò diſtinguere poſſint: neque ſectiones cadaverum diſtinctiones adhibitas confirmant."—Cullen *Syn. Noſ.*, tom. ii, G. ix.

Willis obſerves that he has often ſeen the meninges, and ſometimes the cortical part itſelf of the brain, inflamed (" *tumore phlegmonòde obſeſſas*"), where the patients experienced none of the ſymptoms of phrenitis, not even delirium, but died with thoſe of torpor, and carus only*; which he aſcribes to compreſſion of the medullary ſubſtance by the inflamed and tumefied parts. Similar ſymptoms are often obſerved in the worſt form of fever, the patient lying from the firſt in a ſtate of ſtupor and inſenſibility, with few if any febrile ſymptoms.

Fontanus relates a caſe of phrenitis or inflammation of the brain, in which the ſymptoms were merely ſuch as are obſerved every day in caſes of malignant fever—" arteriam in carpo contemplor duram cum pulſu frequenti et exiguo : ægrum imaginatione laborare deprehendo, *continuò delirantem*, *floccos carpentem*, *inſomnem*, immorigerum ; cui lingua exuſta, *fuliginoſa*, *nigra* ;

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* Willis *De Anima Brutorum*, p. ii, cap. x.

excrementa ſicca, dura, pilularum inſtar: hunc phrenitide laborare confirmata, eaque exitiali, mihi perſuaſi: nam triduo poſt, nullis auxiliis aptis proficientibus, migravit e vivis. Secto capite, contemplatoque cerebro, in ejus medullari ſubſtantia repertus eſt tumor nucis juglandis magnitudinis, rubidus et venis turgentibus ſanguine repletis, qui hujus noxæ cauſa fuit certiſſima: rupto abſceſſu, emanabat fœtidus ichor, cochlearis quantitate[*]."

Dr. Cullen, at the ſame time that he defined phrenitis in the way above mentioned, was fully aware of the ambiguity of thoſe ſymptoms, and of their being often wanting. "Rectè monet Vogelius," he ſays, "ſigna phrenitidis, vel ut vocat *phreniſmi*, hoc eſt, inflammationis cerebri aut membranarum ejus, admodùm ambigua eſſe[†]:" and he himſelf obſerves elſewhere, "that an *idiopathic* phrenzy is a rare occurrence, a *ſympathic* more frequent; and the aſcertaining either the one or the other is, upon many occaſions, difficult. Many of the ſymptoms by which the diſeaſe is moſt commonly judged to be preſent have been obſerved, when from certain conſiderations it was preſumed, and *even from diſſection it appeared*, that there had been no internal inflammation* ; and, on the other hand, diſſections have ſhewn that the brain had been inflamed, when few of the peculiar ſymptoms of phrenzy had before appeared†."

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[*] *Analect*, cap. 1.

[†] Cullen *Syn. Noſ.*, tom. ii, p. 91.

In attending to the definitions uſually given of inflammation in the brain, one would be led to ſuppoſe it always a moſt acute diſeaſe, characterized by the moſt ſtriking ſymptoms, and running its courſe with rapidity and violence‡. From what has been already ſaid, it is clear that ſuch a character does not eſſentially belong to it. In the *epidemics* of Hippocrates, many caſes of phrenitis are to be found where the diſeaſe ran out to the ſeventeenth, twenty-fourth, and thirtieth day, and even beyond. Van Swieten obſerves, that the violent ſymptoms which ſometimes accompany phrenitis are not always preſent—" non ſemper tamen talis ferocia adeſt" — " dari enim phrenitides, et *peſſimos* quidem, in quibus ægri obſcure delirant, abſque ulla ferocia, ex Hippocrate et Galeno ibidem demonſtratum fuit*."

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* It is in caſes ſuch as theſe, I imagine, where the ſymptoms of phrenitis have taken place without any viſible alteration of ſtructure being perceived after death, that the fanciful diſtinctions of *phrenitis* and *paraphrenitis* have been made; as if, in the latter caſe, the diaphragm were the ſeat of the diſeaſe. Some have referred the ſymptoms in theſe caſes to the ſtomach; others, to an irritation or confuſion of the *animal ſpirits*.—In reality, they ſerve only to ſhew the imperfection of anatomical inveſtigations, and the incompetency of theſe, on many occaſions, to detect the intimate nature of diſeaſes. See *chap.* 1, § 4 and 25.

† *Firſt Lines of the Practice of Phyſic*, ccxcii.

‡ Boerhaave, following Hippocrates and Galen, ſays, a true phrenzy kills on the third, fourth, or ſeventh day, rarely exceeding the latter period *(Aph. 774)*. It is plain that this only applies to the moſt acute form of the diſeaſe.

The ſymptoms which indicate the brain to be inflamed, are very different according to the violence of the diſorder, and the particular ſtage of it. This is eſpecially obſervable in hydrocephalus, a diſeaſe now known to be founded originally in inflammation, though its true nature was for a long period overlooked. In this, though a primary affection, there is neither to be found in general the " pyrexia vehemens," nor the " delirium ferox;" the ſymptoms, in the early ſtage, are thoſe merely of ordinary fever, and often not to be diſtinguiſhed from it. If, therefore, inflammation in the brain produces, in this inſtance, the eſſential ſymptoms of fever, the preſence of ſuch ſymptoms on other occaſions might naturally lead us to ſuſpect a ſimilar cauſe; a ſuſpicion which diſſection has very often proved to be well founded. That inflammation in the brain has not always been perceived after fever, admits, I think, of a ſatisfactory explanation, as I ſhall endeavour to ſhew hereafter.

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* *Aph.* 771.

As the moſt acute ſymptoms above deſcribed are ſometimes wanting in phrenitis, ſo, on the other hand, they are occaſionally preſent in fevers. In ſuch of theſe as are very violent, it is not uncommon to obſerve the *pyrexia vehemens*, and the *delirium ferox;* and with regard to the other parts of the definition of phrenitis given by Dr. Cullen, namely, the "*capitis dolor,*" "*faciei rubor et oculorum,*" "*lucis et ſoni intolerantia,*" "*pervigilium,*" and "*typhomania,*" it is difficult to ſay whether they more frequently accompany phrenitis or fever: in aggravated and malignant caſes of the latter, they are ſcarcely ever abſent.

Who but would ſuppoſe, on reading the following deſcription by Galen, that he was giving the hiſtory of malignant fever ſimply? —"Oculos habent vehementer ſqualidos, et "ex altero ipſorum acris lachryma effun-

"ditur, ac deinde lemas habent, et venas "ipſorum ſanguine plenas; et ſanguis "ſtillat è naribus. Quo tempore, neque "jam planè ut mentis compotes reſpondent, "floccos avellunt, et feſtucas carpunt, &c. "Quid dicam de linguâ aſperâ, auditu "quandoque hebetiori, tum quod interdum "moeſti jaceant, vix reſpondentes, &c*."—Yet this is given as a deſcription of the *phrenitis vera.*

The characters given of *cephalitis*† and *ſphaceliſmus*‡ by *Sauvages* and *Linnæus*, that is, of inflammation of the ſubſtance of the brain in contradiſtinction to the inflammation of its membranes, which they denominate *phrenitis* excluſively, apply very nearly to the *typhus gravior* of Cullen, the putrid, malignant, or petechial fever of other authors. *Cephalitis* is deſcribed in theſe terms by Sauvages. "Febris acuta, cum delirio ſomnolento, et carpologia;" and the *ſphaceliſmus* of Linnæus is thus defined: "Febris ſynochus, delirium, car-"pologia, aſthenia, immobilitas, anæſthe-"ſia, aphonia."

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* Galen *De locis Affect.*, lib. 5, c. 4.
† Sauvages *Noſ. Method.*
‡ Linnei *Gen. Morb.*

It is evident, therefore, that phrenitis and fever have not been accurately diſtinguiſhed from one another, even by the beſt writers; indeed, the ſimilarity of ſymptoms in the two is on many occaſions ſo great, that it is ſcarcely poſſible to diſcriminate between them; an irreſiſtible argument, in my opinion, is thus afforded of the identity of their nature, and of their being merely different modifications of the ſame topical affection.

It may be obſerved further, that the ſigns of danger and approaching diſſolution are the ſame in fevers as in phrenitis. Thus *ſtridor dentium*, *nervorum tremores*, *flocculorum carptio*, *ſopor*, *palpebræ oculorum haud penitus vel inæqualiter commiſſæ*, *et excretiones inſcio ægro peractæ*, are mentioned by *Hippocrates* as ſymptoms indicating a fatal termination in phrenitis*; and every one knows they conſtitute the fatal ſigns of fevers of all deſcriptions.

It has been remarked by Dr. Cullen, in the paſſage quoted above, that *phrenitis vera*, or idiopathic phrenzy, is a rare occurrence; and Dr. Home, in his *Principia Medicinæ*, ſays, " rariſſime in hiſce regionibus apparet[*]." But from what has been already ſaid, it is evident in what ſenſe this aſſertion is to be underſtood. It applies only to that variety of phrenitis where the moſt acute ſymptoms are preſent, viz., the *pyrexia vehemens*, and the *delirium ferox*. As, however, it has been ſhewn that theſe ſymptoms are by no means neceſſary to conſtitute the diſeaſe, but are, on the contrary, often wanting, it will immediately appear that inflammation of the brain is more frequent than has been ſtated by theſe writers. Indeed, when the extreme vaſcularity of the brain is conſidered, and its proximity to the heart, circumſtances which invariably diſpoſe to inflammation in other organs; when we conſider, alſo, that a great portion of it, to wit, the cortical, is made up, as it were, of innumerable blood-veſſels[†]; and when we reflect, at the ſame time, on the numberleſs cauſes which may and do occaſion an increaſed determination of blood to the head, as violent exerciſe, ſpirituous drinks, paſſions of the mind, &c.; the brain, of all organs, might be expected to be moſt prone to inflammation. That ſuch cauſes do actually induce an increaſe of action in the veſſels of the head, is evident by the fluſhing of the face, the throbbing in the temples, &c., which ſo immediately reſult from their application.

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* *Prorrhet.*, lib. 1, c. 1.

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[*] *Princip. Med.*, p. 2, ſect. 3, 4.

[†] Ruyſch demonſtrated by injections, that the cortical ſubſtance of the brain is chiefly compoſed of veſſels.

The ſtrong propenſity of the brain to inflammation, in different degrees, is ſhewn by the great frequency of its diſeaſes. Hence the frequent occurrence of hydrocephalus in infancy, and of apoplexy and its conſequences in advanced age: hence the very frequent headachs (to ſay nothing of proper fevers) that take place in every period of life. Hence, too, the appearances noticed by writers on morbid anatomy, indicating antecedent inflammation of the brain or its membranes; as induration, callus, oſſification, effuſion, preternatural redneſs, aneuriſm, hydatids, concretion of parts, adheſions, and abſceſs itſelf; all of which are amongſt the moſt ordinary occurrences met with in the diſſection of morbid bodies.

It muſt be at once evident, therefore, that there has been a miſtake in the ſuppoſition, that inflammation of the brain, or *phrenitis vera* (for they are one and the ſame) is a rare occurrence. The fact is, that the diſeaſe has been often overlooked, as we know to have been the caſe with regard to one ſpecies of it, viz., the acute hydrocephalus, which, for ages, was miſunderſtood; ſecondary and remote ſymptoms having both given name to the diſeaſe, and afforded the indications for its cure. This, I apprehend, is juſt what has happened with regard to fever: the ſecondary ſymptoms have chiefly attracted notice, and been conſidered as the diſeaſe, whilſt the primary and eſſential affection has been overlooked. The error was productive of practical miſchief in the caſe of hydrocephalus; and it has probably not been without unfavourable conſequences in the treatment of fever.

It is allowed on all hands, that phrenitis does frequently occur in fever, and the combination, in my opinion, is by much too common to be merely accidental. An author, before quoted, remarks, that it aſſociates itſelf with almoſt all fevers, but eſpecially the *malignant*, *variolous*, and *camp* fever*; but then it is ſuppoſed to be merely ſymptomatic, and not eſſential to the fever. This is only to be judged of by examination of the ſymptoms of fever during its whole courſe, and a compariſon of them with thoſe which peculiarly belong to phrenitis. It has been ſhewn that the character of phrenitis, as uſually given, is ambiguous and equivocal. Inflammation of the brain, it has been proved, may be preſent without the ſymptoms commonly aſcribed to phrenitis; and, on the other hand, undoubted ſigns of previous inflammation in the brain have appeared after death, where none but the ordinary ſymptoms of fever had manifeſted themſelves during life; as will more fully be ſhewn hereafter.

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* Home *Princip. Med.*, loc. cit.

The occaſional cauſes of phrenitis and of fever are in many inſtances the ſame. External violence, expoſure to the burning rays of a vertical ſun, the exceſſive uſe of ſpirituous liquors, and vehement paſſions of the mind, are known to give riſe equally to phrenitis and to fever. Certain kinds of food taken into the ſtomach, and ſome poiſons, as opium, hyoſciamus, and the like, have been ſaid to occaſion, at different times, both phrenitis and fever.

The ſymptoms which ſucceed to injuries inflicted on the head, ſome days after the accident, and which are known to depend upon the coming on of inflammation in the brain, have often every character of idiopathic fever, and have repeatedly been miſtaken for it. Many inſtances of this ſort are to be found in chirurgical writers. Mr. Pott mentions the caſe of a woman who was brought into St. Bartholomew's Hoſpital, labouring, as it was ſuppoſed, under fever, and put under the phyſician's care accordingly. The pulſe was full and hard, the ſkin hot and dry, the tongue furred and black; there was nauſea, with diſpoſition to vomit; thirſt, intolerable headach, and pervigilium. The common treatment of fever was had recourſe to. On the following day, however, a tumor was accidentally diſcovered on the ſcalp, which being opened, the bone was found to be bare, and, beneath this, purulent matter lodged on the dura mater. This, on inquiry, proved to be the conſequence of a blow received on the head eight days before, and which was not ſuſpected, at the time of her admiſſion into the hoſpital, to have any connexion with her diſorder. Had this diſcovery not been made, it is probable the patient would have been conſidered to die of common fever*.

A man received a ſlight wound on the head, which being healed by the third day, the patient was diſcharged from the hoſpital cured. A week afterwards, he was brought again to the hoſpital as a fever-patient, was put into the fever-ward, and treated accordingly by the phyſician, during the ſpace of four days. He was comatoſe, with a central pulſe inconceivably languid : his ſenſes were clear, but he was prevailed upon with difficulty to anſwer queſtions : he had ſome convulſive motions in his face, with a grinding of the teeth. By mere accident he made complaint of a ſlight pain in the part where he had received the ſtroke, and this led to the detection of the real nature of the caſe*.—Had the interval between the wound and the ſubſequent ſymptoms in this caſe been a little longer, or had the patient not been ſent to the ſame hoſpital as at firſt, it is probable he would have been treated as a fever-patient throughout.

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* Pott on *Injuries of the Head*, caſe 7.

The mode of cure found moſt ſucceſsful in phrenitis, is applicable alſo, in a conſiderable degree, to fever, due allowance being made for the habit of the patient and the ſtage of the diſeaſe. In the acute form of phrenitis, blood-letting, with all the other antiphlogiſtic remedies, is principally relied on. In the moſt violent forms of fever, blood-letting appears, from experience, to be no leſs neceſſary, as will be ſeen hereafter. In the chronic form of inflammation in the brain, and in ſuch as takes place in ſcrophulous children, the ſame liberal evacuations are probably not admiſſible, any more than they are in certain ſtates of fever.

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* Le Dran's *Obſ. in Surgery*, obſ. 25.

It appears, then, that fever and phrenitis have their moſt eſſential ſymptoms in common, all of which are referable to the brain and its functions; they are produced by ſimilar cauſes; and the prognoſis is the ſame in both. The feelings referred by the patient to the head in fever, are juſt the ſame with thoſe of other inflamed parts; viz., pain, heat, and throbbing; whilſt the functions of the brain are in every caſe more or leſs deranged: and, laſtly, the general ſtate of the ſyſtem is the ſame as in other internal inflammations, due allowance being made for the influence which the brain exerts over various parts of the body, and which tends not a little to modify the general affection. There ſeem to me, therefore, the ſtrongeſt reaſons for concluding, that the inflammation of the brain in fever is not merely caſual and ſecondary, but primary and eſſential; of which further proofs ſtill remain to be adduced.

## Sect. IX.---*Of Diſſection, as illuſtrating the Nature of Fever.*

THE arguments hitherto advanced in ſupport of the opinion, that fever conſiſts eſſentially in a topical inflammation of the brain, are derived principally from analogy, and an inveſtigation of the phenomena of the diſeaſe in relation to the peculiar functions of that organ. It might naturally be expected, that diſſection of the bodies of thoſe in whom the diſeaſe had proved fatal, would remove all doubt from the ſubject; and at once either ſatisfactorily eſtabliſh or overthrow the opinion in queſtion. But although much light is undoubtedly to be derived from this ſource, and we ſhall find, in fact, that every ſupport is afforded to the ſuppoſition that could reaſonably have been looked for, yet the evidence furniſhed by diſſection is not abſolutely concluſive; and that for different reaſons.

In the firſt place, the wonderfully minute and delicate ſtructure of the brain renders it very unfavourable for accurate examination*. Of this complicated organ, made up of numerous parts, the particular uſes of which are almoſt wholly unknown, our knowledge is exceedingly limited. It more quickly undergoes a change towards putrefaction than almoſt any other organ of the body, and, previouſly to putrefaction, becomes ſoft and unreſiſting, rendering difficult or fruitleſs all attempts to obſerve it narrowly. This tendency to decompoſition in the brain comes on in general ſo rapidly after death, that we are probably but little acquainted with its perfectly ſound and natural appearance.

In the next place, it is to be conſidered, that by far the greater number of demonſtrations of the human body, given by anatomiſts in the ſchools, and from which our knowledge of the ſtructure and appearance of the brain is principally derived, are of ſubjects deſtroyed by diſeaſes, many of them, no doubt, of this very organ. And when we reflect, further, on the ſources from which the anatomical theatres are chiefly ſupplied, namely, the moſt indigent claſſes of ſociety, a large proportion of whom are daily cut off by fevers, it muſt appear highly probable, that what is conſidered and exhibited as the natural and healthy ſtate of parts, is often in reality a diſeaſed one, perhaps the immediate conſequence of fever itſelf, and which we have not yet learned clearly to diſtinguiſh from the ſtate of health*.—It is almoſt needleſs to obſerve with reſpect to this, that where the ſound and natural ſtate of a part is imperfectly known, it is quite impoſſible that the morbid changes of ſtructure to which it is liable ſhould be well underſtood. What we, therefore, ſo commonly meet with in books, as to the ſtate of the brain in regard to hardneſs, ſoftneſs, colour, fulneſs or emptineſs of veſſels, &c., is perhaps little to be relied upon. Not that ſuch appearances do not really exiſt, or are unfaithfully deſcribed, but becauſe we have no certain ſtandard of health to which we can refer them as objects of compariſon. Nor can we readily tell, in all caſes, whether the changes obſerved are the effects of diſeaſe, or of a beginning decompoſition of parts.

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* "The ſubſtance of the brain is ſo ſoft, and the fibres ſo tender, that they can hardly be touched without breaking:—anatomy has not hitherto arrived at that degree of perfection as to make the true diſſection of the brain."—(Steno's *Diſſ. on the Brain:* ſee Winſlow, ſect. 10, § 195.

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* An inſtance of this came very lately within my own knowledge. The brain of a perſon dead of ſmall-pox was exhibited before a number of ſtudents, in the ordinary courſe of demonſtration, in the diſſecting room of a public teacher of anatomy. And although the blood-veſſels in general were turgid, and the membranes in many parts ſuffuſed with blood, like the coats of an inflamed eye (appearances that are very commonly obſerved after ſmall-pox, and, as far as my obſervation has yet gone, in greater or leſs degree in fevers in general), no notice was taken by the teacher of circumſtances ſo ſtrongly indicating inflammation; of courſe, the ſtudents went away impreſſed with the idea, that what they had ſeen was the natural ſtate of parts. How then, I would aſk, could they be afterwards qualified to detect or deſcribe the morbid appearances of ſuch an organ? excepting, indeed, the groſſer changes of ſtructure and diſorganization, as *ſuppuration*, *extravaſation*, or *effuſion*; theſe are too obvious to eſcape notice; but they, probably, bear but a very ſmall proportion to the number of ſlighter derangements in the ſtructure of this organ, many of which may elude the obſervation of the moſt ſkilful anatomiſt.

Further, it is to be ſuſpected, that thoſe who have taken upon them to obſerve and report on the ſtate of this organ after death, have not always been perfectly competent to the taſk. "Paucæ quidem," ſays Soemmering, "exſtant huč pertinentes obſervationes á viris ſtructuræ corporis humani adprimè gnaris deſcriptæ*." That inflammation of the brain, though preſent in fever, has been ſometimes overlooked, even by practical anatomiſts, is evident from the following:

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* *De Corp. Hum. Fab.*, tom. 4, ſect. 11.

Bonetus, deſcribing a caſe of fever where the patient died with lethargic ſymptoms, ſays, " on opening the head, the dura mater appeared ſlightly inflamed: the veſſels of the pia mater, in their courſe to the third ſinus, were of three times their uſual ſize, *but without inflammation*, and the ſinus itſelf was full of blood. The ſurface of each ventricle was *rough*, *unequal*, and flaccid, and *covered with a viſcid purulent fluid**. Fontanus relates the caſe of a young man who, on the ninth day of a tertian, was ſeized with the ſymptoms of phrenitis, and lived till the ſixty-fifth day. The brain on inſpection, he ſays, was found *without injury*, but marked in various parts with bloody ſpots—*maculis ſanguineis undequaque reſperſum.*—The pia mater was turgid with blood, *et ramuli ejus tumidi et accenſi.*—This ſhews how little reliance is to be placed on the general aſſertion in this and many other caſes, that the brain had ſuffered no injury. Clearer marks of diſordered vaſcular action could not well exiſt, than are to be found in the caſes juſt quoted.

On the other hand, anatomical inveſtigations, inſtead of illuſtrating the nature of the diſeaſe, have ſometimes involved it in greater obſcurity, and given riſe to the moſt abſurd ſuggeſtions on the ſubject. The ſame Bonetus quotes with much ſolemnity, from Bartholin, a caſe of fever, in which the pancreatic duct was found to be obſtructed; and to this obſtruction was the fever aſcribed—the pancreatic juice, becoming acrimonious by its lodgement, and, from accumulation, after a time forcing its way into the duodenum, entered into fermentation with the bile, and thus produced the various ſymptoms of the diſeaſe!

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* Boneti *Sepulchret. Anat.*, lib. 4, ſect. 1.

To this may be added a dread of infection, which has prevented the examination of the bodies of fever-patients in the greater number of inſtances, and at the ſame time has rendered ſuch examinations as have been made, haſty and unſatisfactory. Morgagni himſelf was a believer in the power of dead bodies to communicate infection, and relates ſome ſtriking inſtances of the ſort. On this account, his great work, *De Sedibus et Cauſis Morborum*, is exceedingly defective in obſervations reſpecting the ſtate of the brain in fever*.

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* "—Paucas naturæ ſcrutatoribus ſuppeditant obſervationes extiſpicia, cùm utplurimum nil ſpectatu dignum

For many ages, and nearly down to our own times, indeed, the immediate cauſe of fever was ſuppoſed to be ſeated in the blood or other humours of the body ; hence theſe have been more regarded in diſſections, than the ſolid parts. Both *Bonetus* and *Morgagni*, when detailing the appearances obſerved by them after fevers, confine themſelves almoſt entirely to the ſtate of the blood, and of the abdominal and thoracic viſcera. The brain in moſt inſtances appears not to have been examined at all, and then only when its functions during life had been more than ordinarily diſturbed: in ſuch, however, manifeſt ſigns of preceding inflammation never failed to be diſcovered. But theſe writers have left us almoſt wholly in the dark, with regard to the ſtate of the brain in ordinary caſes of fever.

From one or other of the cauſes mentioned, examinations of the brain after fever have been very rarely undertaken. I am inclined to doubt, indeed, from the inquiries I have made, whether half a dozen ſuch diſſections have *purpoſely* been inſtituted in this metropolis, within as many years

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occurrat ; vel cadaverum ſectiones, *pro ſummo fœtore* aut *contagii metu*, raptim et feſtinanter inſtituantur."—Lieutaud *Synop. Univ. Prax. Med.*, 4to; p. 25.

laſt paſt; while, in all probability, a great number of brains of patients dying of fever have been diſſected within the ſame period, and, more than this, have been exhibited to the view of ſtudents as the natural condition of the organ.

But even allowing the examination to have been made under the moſt favourable circumſtances, and by thoſe beſt qualified for the taſk, the minute and ſubtle ſtructure of the brain oppoſes an obſtacle which muſt, on many occaſions, be nearly inſurmountable. Many changes may have taken place in ſo delicate an organ, unfitting it for the due and perfect performance of its functions, which changes may yet not be manifeſt to the ſenſes. Morbid conditions of parts often exiſt without being diſcoverable by the eye or the touch of the practitioner. The change from healthy to diſeaſed action, and ſtill more from health to viſible alteration of ſtructure, is often by ſlow and imperceptible degrees. This is proved by the conſequences. In caſes of cancer, where every apparently-diſeaſed part has been removed with the greateſt care, by exciſion, the diſeaſe is found to recur in the ſurrounding parts; rendering it probable that the firſt or inſenſible ſtage of diſeaſe had taken place in them before the operation.

The medullary part of the brain, which is not only the largeſt, but probably the moſt important in reſpect to its functions, appears, in the natural ſtate, to be nearly homogeneous in its texture. Scarcely any blood-veſſels (with the exception of a few, that ſeem merely to traverſe its ſubſtance) are diſcoverable in it, even with the beſt microſcopical aid. Nor have artificial injections, however otherwiſe ſucceſsfully made, been found to penetrate it; ſo that it appears to the eye to be leſs furniſhed with blood-veſſels, than almoſt any other part of the body[*]. Even in the cineritious portion, which is evidently made up in a great meaſure of innumerable minute veſſels, ſome parts are always found that have not received the injection[†]. No one, however, would venture to conclude from hence, that the brain was of an inorganic texture, or deſtitute of veſſels in any part. Such a concluſion would be oppoſed by the ſtrongeſt analogy, as well as by the fact of abſceſſes being occaſionally found in the very center of the medullary ſubſtance.

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[*] I ſpeak here of the brain in its leaſt vaſcular ſtate, and which is probably the healthy ſtate of the organ. Authors differ conſiderably in their accounts of the vaſcularity of the medullary part of the brain: this difference, I conceive, is only to be accounted for by ſuppoſing, that they have made their obſervations under different conditions of the organ, without diſtinguiſhing ſufficiently between its healthy and diſeaſed ſtates.

[†] Soemmering *De Corp. Hum. Fab.*, vol. 4, ſect. 2.

One of the chief ſigns after death, by which we judge of a part having been previouſly inflamed, is a greater redneſs than natural, the effect of an increaſe in the number and ſize of veſſels carrying red blood. Such an appearance has, in fact, been very frequently obſerved, both after fever and phrenitis; but chiefly on the external ſurface of the brain, or in the membranes which line its cavities; that is, in thoſe parts which, even in the healthy ſtate, are furniſhed with blood-veſſels ſufficiently obvious to the ſight. But it is not at all ſurprizing, that the inconceivably minute veſſels of the medullary portion, which in the ſound ſtate are altogether inviſible, ſhould not, even under inflammation, have their capacities ſufficiently enlarged to admit the colouring parts of the blood.

Redneſs is certainly not an eſſential character of inflammation. In hydrocephalus internus, which, it is now univerſally agreed, owes its origin to inflammation, the only change, oftentimes, that can be obſerved in the parts after death, is a thickening and opacity of the *tunica arachnoidea*, a membrane which in the ſound ſtate is pellucid, and of extreme tenuity*. Had the medullary part of the brain been as diaphanous as its membranes, or as the cryſtalline humour of the eye, we ſhould have been enabled to detect many changes in ſtructure that now wholly eſcape our obſervation.

Many parts which, in the living and healthy ſtate, admit only the colourleſs parts of the blood, readily receive a coloured injection after death; this is the caſe with the tunica albuginea of the eye, and the inveſting membranes of various parts: theſe are found, likewiſe, to become red by inflammation. But the medullary ſubſtance of the brain, and part alſo of the cortical, refuſe to admit the fineſt colouring matters by injection; which ſeems to ſhew, that their veſſels are ſtill more minute or impermeable than thoſe of membranous parts, and, therefore, might be the leſs expected to be reddened by inflammation.

There is no difficulty, therefore, in ſuppoſing, that the brain may have undergone material changes in its ſtructure from inflammation, though our ſenſes are incompetent to detect them. In an organ of ſuch importance in the animal œconomy, and which ſo materially influences the actions of other parts of the ſyſtem, it is eaſily conceivable that ſuch a degree of derangement may take place as even to prove fatal, without leaving behind it any viſible traces: and, in reality, ſuch has often been the caſe. There are many inſtances recorded of fatal apoplexies, epilepſies, palſies, &c., where no perceptible change in the appearance of the brain could be diſcovered after death. External violence, too, as blows on the head, producing what has been termed by ſurgeons *concuſſion* of the brain, have often killed the patient, when, on examination, no adequate cauſe of the ſymptoms could be detected*.

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* *Soemmering*, loc. cit.

* "We ſee many die ſuddenly from a box on the ear, and from ſmall blows or wounds; in ſome whereof, upon opening the cranium, there hath been much blood extravaſated; in others none at all, nor *ought elſe* that may be thought to have killed the patient."—Wiſeman's *Surgery*, book 5.—" As the arteries diſperſed through the pia mater, as ſoon as they enter the cortical ſubſtance, are immediately ſo minutely divided as to reſemble a fine down, and are intermixed with and accompany the ſmalleſt medullary fibres; it is eaſy to conceive that thoſe tender and minute fibrils of the encephalon upon which life and

Admitting, therefore, that the medullary ſubſtance of the brain is the primary ſeat of morbid affection in fever—a ſuppoſition that is warranted by the leſion of its functions, ſo conſtantly obſerved throughout every ſtage of the diſeaſe—we are not, for the reaſons mentioned, to look for viſible change of ſtructure in every inſtance of fatal termination. Yet appearances unequivocally indicative of preceding inflammation of the brain or its membranes are exceedingly common after fevers, as we learn from the teſtimony of various authors of credit who have inveſtigated the ſubject.

*Bonetus* adduces a great many hiſtories of fever, in which evident marks of inflammation in the brain were diſcovered after death. Amongſt others, it will be ſufficient to refer to his 34*th Obſervation*, which contains four caſes of *cauſus* or *ardent fever*, where accumulation of lymph, abſceſs, and other unequivocal marks of antecedent inflammation, were found[*]. *Obſervation* 44, contains a

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intellect depend, may be broken or compreſſed by ſuch a ſhock, whence a leſion or even abolition of all the ſenſorial functions may take place without any perceptible injury, or effuſion of fluids within the ſkull."—*Van Swieten*, Com. in Aph. 274.

[*] *Boneti* Sepulchret. Anat., *obſ.* 34.

caſe of fever of the tertian type, attended, in the height of the paroxyſms, with apoplectic ſymptoms, and which terminated fatally. On diſſection, conſiderable aqueous effuſion was obſerved within the ſkull[*].

*Morgagni*, whoſe great work contains ſo many illuſtrations of the ſeats and cauſes of diſeaſes in general, is remarkably defective on this point. The reaſon of this was hinted at above. He adduces ſome inſtances, however, from his preceptor *Valſalva*, where, in the courſe of fever, apoplexy, and other affections indicative of derangement in the functions of the brain, took place, and in which ſerous effuſion, and other marks of preceding inflammation, were diſcovered after death[†].

Lieutaud obſerves generally, with regard to malignant fevers, that abſceſſes, and ſanious and purulent collections in the brain, are conſequences exceedingly common[‡]. In his *Hiſtoria Anatomico-Medica*, inſtances without number may be found, collected partly from the writings of others, and partly from his own obſervation, in which the brain, after fevers, exhibited the ordinary ſigns of inflammation. Nor did this occur only in one ſpecies of fever, or in combination with the ſymptoms uſually conſidered as indicating phrenitis to have taken place: it was equally obſerved after fevers of various types, and the moſt diſſimilar in character and degree; for example, in fevers of a continued form, and in intermittents, tertian as well as quartan; in the more and in the leſs acute; in thoſe called malignant and peſtilential; and likewiſe in fevers of the exanthematous kind. And it is eſpecially deſerving of notice, that ſuch appearances were found in caſes, which, during the courſe of the diſeaſe, had exhibited none of the ſymptoms uſually aſcribed to phrenitis, but merely ſuch as are ordinarily obſerved in fever*.

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[*] *Piſo* De Morbis a Sero, *ſect.* 2.

[†] Morgagni *Epiſt.*, 4, 6, 7, 8, paſſim.

[‡] Abſceſſus pluries exhibuit caput apertum, tum in interioribus cerebri clauſtris, tum circa hujuſce viſceris ambitum; non ſecus ac ſtagnationes ſanioſas et purulentas in cerebri anfractibus, aliiſque receſſibus.—(Lieutaud. Synop. Univ. Prax. Med., 4to, p. 25.)

Werlhoff ſays, that ſtagnation of lymph within the convolutions of the brain, and under the pia mater, was frequently obſerved in the bodies of thoſe dying of continued fevers*. And Mangetus remarks, that malignant fevers have often phrenitis conjoined with them, and this without any remarkable efferveſcence of the blood, or violent febrile ſymptoms†.

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* Lieutaud *Hiſt. Anat. Med.:* ſee particularly *obſervations* 67, 185, 196, 270, 521.

Haller has remarked the ſame frequent combination of phrenitis with malignant fever‡. The acceſſion of inflammation in the brain, as an accidental occurrence, might eaſily be accounted for in the inflammatory form of fever, where the whole vaſcular ſyſtem is acting in exceſs, producing a general tendency to inflammation in the ſyſtem: but its occurrence in that depreſſed ſtate of the general circulation which accompanies malignant fever, can only, as it appears to me, be explained upon the ſuppoſition of its being the eſſential part of the diſeaſe.

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[*] " Stagnatio lymphæ intra anfractus cerebri, et ſub tenui meninge, ſæpe reperta fuit in cadaveribus febre continua defunctorum, fortiter et continuo delirantium ante obitum."—*(De Affectibus Capitis, obſ. 3.)*

[†] " Febres malignæ ſæpius conjunctas habent phrenitides; et quidem hæ phrenitides in febribus malignis ſuperveniunt citra inſignem ſanguinis efferveſcentiam et corporis incaleſcentiam."—*(Bib. Med. Pract.*, lib. iv.*)*

[‡] " In cadaveribus variorum phrenitide, febris malignæ ſymptomate, defunctorum, pià meninx adeo inflammata erat, ut colore atro-rubro inficeretur."

Sir J. Pringle deſcribes many caſes of fever that occurred in his military practice, where he found abſceſſes in the brain of the dead ſubject. He mentions, in particular, the caſe of one that died of malignant fever, in whoſe brain three ounces of pus were found; yet there had been no delirium through the whole courſe of the diſeaſe*:—we learn from this, how little the ſymptoms commonly ſuppoſed to denote the preſence of inflammation in this organ are to be relied on.

Dr. *Donald Monro*, who devoted his earlier years to anatomical reſearches, and whoſe teſtimony upon this point, conſequently, is of conſiderable weight, ſpeaking of the petechial fever, in his *Treatiſe on Military Hoſpitals*, remarks, that "this "fever occaſions in general more or leſs "redneſs (I do not know that we can pro-"perly call it true acute inflammation) of "the membranes; and the febrile matter "is apt to fall on particular parts, and "there to create abſceſſes; particularly in "the brain, the lungs, and the glandular

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* *Diſeaſes of the Army.*—Is the abſence of delirium in this caſe attributable to the diſeaſe being ſeated principally in the cerebellum?

"organs*." The theory of the agency of the febrile matter here given, may perhaps not very well accord with our preſent ideas in phyſiology; but the obſervation, as a matter of fact, ſufficiently proves the alliance between fever and inflammation.

*Vogel* remarks, that diſſections of perſons dying of typhus very frequently exhibit inflammation, ſuppuration, and even gangrene of the brain†. And *Chambon* obſerves, that the ſubſtance of the brain, in every part, is often found harder than natural after malignant fevers‡:—this we know to be a common effect of inflammation in other parts.

The *tunica arachnoidea* is not unfrequently obſerved in diſſections to be ſeparated from the pia mater, by the interpoſition of a gelatinous fluid: "this," Dr. Baillie, in his *Morbid Anatomy*, remarks, "is not an un-"common appearance of diſeaſe, *particular-"ly after fevers*, where the brain has been "a good deal affected§."

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[*] *Treatiſe on Military Hoſpitals*, 8vo, vol. 1, p. 237.

[†] *Handbuck der Pract. Artzn. &c.*

[‡] *Obſ. Clin. Pract.* 1789, obſ. 29.

[§] *Morbid Anatomy*, p. 294.

Dr. Jackſon ſays, ſpeaking of the yellow fever, "the brain appears upon diſſection to be more or leſs affected in the majority of ſubjects who die in the acute ſtate of diſeaſe, or under the actual influence of fever: the membranes are then inflamed; or the blood-veſſels, turgid to an extraordinary degree, give an appearance of commencing gangrene, rather than that of inflammation properly ſo called: water is ſometimes found in the ventricles, with evident effuſion in the interſtices, but this is an effect, not general, not even frequent."

A hoſt of other inſtances might be adduced to prove, that fevers of all deſcriptions very frequently leave behind them viſible topical affections of the brain, demonſtrating the exiſtence of previous inflammation in that organ. It is not, however, to be imagined, that the appearances now mentioned are to be found in every caſe of fever. The eſſential part of this, as of moſt other primary diſeaſes, conſiſts, not in the altered ſtructure of parts, but in perverted actions: change of ſtructure is a remote effect, a conſequence merely of the morbid action, and is what may or may not take place. Hence if the diſeaſe prove fatal before ſuch alteration of ſtructure is induced (which may well be ſuppoſed to happen with reſpect to an organ, upon the ſtate of which all the functions of the ſyſtem more or leſs immediately depend), few or no traces of the diſeaſe can be expected to be ſeen after death. The intermiſſions of fever, during which patients often enjoy an almoſt total exemption from diſeaſe, and the ſpeedy return to perfect health after their cure, prove that no great derangement of ſtructure can have taken place. That fever does not *neceſſarily* kill by deſtroying the organization of the brain, is ſhewn alſo by the return, in ſome few inſtances, of the mental faculties a ſhort time before death, where delirium had been preſent throughout the previous courſe of the diſeaſe.

One obvious cauſe of obſcurity with regard to the primary ſeat of diſeaſe in fever, and a reaſon why diſſection has failed to point it out, is that patients are often cut off by the conſequences of fever, rather than by the fever itſelf;—by inflammation of other organs coming on during its courſe, modifying the character of the original diſeaſe, and ending in diſorganization of the part ſecondarily affected. In hot climates, ſuch occurrences, as before obſerved, are exceedingly common, particularly with regard to the abdominal viſcera, to which the examination after death has been principally confined. "It is a fact worthy of remark," ſays Dr. Jackſon, "that of all the Europeans who fall victims to the diſeaſes of tropical climates, two thirds, under ordinary circumſtances, yield to the effects rather than to the direct influence of the acute malady; that is, to obſtruction or changed organization of one or other of the viſcera*."

What has been juſt remarked enables us to underſtand an obſervation of Morgagni, "that there are many caſes of ſynocha, which, if the bodies of thoſe dying of it be examined, either exhibit nothing that points out the particular ſeat and nature of the principal affection, or elſe they ſhew, indeed, great and manifeſt leſions of ſtructure in the viſcera, but which, if compared with the ſymptoms of the diſeaſe, appear evidently to have been produced by ſome other latent primary affection†."

Upon the whole, although viſible leſion of ſtructure in the brain from inflammation be neither a neceſſary nor a conſtant effect of fever, yet is it too frequent an occurrence, to allow us to conſider it as merely accidental; while the ſigns of diſordered vaſcular action, tending to diſorganization, are never wanting. Were our means of obſervation more accurate, and our diligence greater, it is probable that in moſt, if not in all, fatal terminations of fever (where the patient is cut off by the fever itſelf, and not by ſupervening diſeaſes), we ſhould be able to detect ſome change in the colour, conſiſtence, tranſparency, or other phyſical property of the organ, indicating a correſponding change in the action of its veſſels.

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* *Outlines of Fever*, ch. 12, ſect. 1.

† *De Sed. et Cauſ.*, epiſt. 3.

But it may be ſaid, that diſorganization of parts (the effect of inflammation), after fever, is by no means confined to the brain; other organs, as thoſe of the thorax and abdomen, frequently ſuffer in a ſimilar way. This is undoubtedly true: but there is this ſtriking difference to be obſerved: Diſorganizations in the viſcera of the thorax and abdomen are always, I believe, preceded by ſymptoms clearly denoting theſe organs to be under a ſtate of inflammation, ſuch as cough, pain in the cheſt, and impeded reſpiration; or, acute pain in the abdomen, vomiting of æruginous, black, or bloody matters, diarrhœa, or dyſentery,—and theſe, in addition to the proper characteriſtic ſymptoms of fever, namely, the derangement of the ſenſorial functions, which are never wanting in any variety of the diſeaſe. But with regard to fever, the caſe is widely different: diſorganization here has been repeatedly detected in the brain, where, during life, none of the ſymptoms commonly ſuppoſed to denote the preſence of phrenitis had manifeſted themſelves, but merely thoſe which characterize ordinary fever. The concluſion appears to me irreſiſtible:—that the ſymptoms of fever are the ſymptoms of inflamed brain, and that the latter is the immediate cauſe of the former; or rather, that fever and inflammation of the brain are identical affections.

## SECT. X.---*Of the Opinions of Authors with regard to the Seat and Nature of Fever.*

THE great frequency of fever, the ſeverity of its ſymptoms, and the fatality ſo often attending it, have made this diſeaſe an object of particular attention to medical practitioners in all ages. Innumerable ſpeculations regarding its nature or proximate cauſe have, in conſequence, been entertained; and it has formed a conſtant theme for diſputation in the ſchools, from the beginning of the eſtabliſhment of phyſic as an art, to the preſent time. Each ſucceeding inquirer, however, into this intricate and abſtruſe ſubject, appears to have been more ſucceſsful in overturning the hypotheſes of his predeceſſors, than in eſtabliſhing any ſatisfactory and permanent doctrine in their ſtead. It is by no means my intention to impoſe on myſelf the taſk of diſcuſſing minutely the various opinions that have prevailed in different ages, reſpecting the ſeat and nature of fever. Such an attempt might exhibit a parade of erudition, but could lead to no practical purpoſe. My principal object will be to ſhew, that, whilſt the generality of doctrines on the ſubject of fever have no other foundation than conjecture and the wildeſt hypotheſis, more than one writer will be found whoſe opinions, when carefully examined, lead to concluſions in a great degree ſimilar to thoſe which are here contended for.

The term fever has been uſed with great latitude, and very differently by different writers; as will appear from the definitions of it that have been given. All, however, ſeem to have been forcibly ſtruck with the increaſe of heat ſo commonly obſerved to accompany fever, and hence, in almoſt every language, the denomination of the diſeaſe bears a reference to this ſymptom. Not that exceſs of heat belongs excluſively to proper fevers, or is even found to accompany them in every inſtance: it is nevertheleſs ſo common an attendant on them, that we need not wonder it ſhould have been in general ſuppoſed to conſtitute the moſt eſſential ſymptom. Hippocrates conſidered increaſe of heat as the chief and characteriſtic ſign of fever; and he formed his diviſion of fevers, in ſome meaſure, upon this idea; as may be inſtanced with regard to the *cauſus* or burning fever; the *leipyria*, with the external parts cold while the internal are in a violent heat; and the *epiala*, or the ſimultaneous feeling of heat and cold, Galen defined fever as conſiſting in preternatural heat, attended with increaſed ſtrength and velocity of the pulſe.

The increaſe of heat in fever was aſcribed by Hippocrates to different cauſes, internal and external; as too great fulneſs of veſſels, exceſs or faulty conſtitution of the bile, obſtruction of the extreme veſſels, and miaſmata; each of theſe, in his opinion, giving riſe to a particular ſpecies or variety of the diſeaſe.—It is eaſy to perceive the uſe that ſucceeding writers have made of theſe different hypotheſes, which, with various modifications, have ſerved to form the baſis of many modern ſyſtems.

It is not neceſſary here to prove, that morbid increaſe of heat in the ſyſtem takes place in a variety of diſeaſes beſides proper idiopathic fever, while in ſome caſes of the latter, during a conſiderable part of their courſe at leaſt, it is altogether wanting. This has been ſufficiently ſhewn in the deſcription of the phenomena of the diſeaſe above given.—And the ſame may be obſerved of the frequency of pulſe, which is neither conſtant nor peculiar to fever.

Eraſiſtratus placed the ſeat of fever in the vaſcular ſyſtem, to which his anatomical inveſtigations ſeem particularly to have directed him. Conceiving, as was cuſtomary among the antients, that the arteries naturally contained air, and not blood, he imagined that the blood eſcaped from the veins into the arteries, owing to the over-fulneſs of the former, and thus gave riſe to the phenomena of fever*. This is, perhaps, the firſt inſtance on record of the doctrine of *error loci.*

Aſclepiades, who was a great innovator in phyſic, took up the idea of obſtruction† as the immediate cauſe of fever, though he admitted increaſe of heat to be the leading ſymptom. He applied the *Corpuſcularian* doctrine of Democritus to the ſubject, and endeavoured to explain the different types of the diſeaſe, by the different ſize of the corpuſcles forming the obſtruction: thus the corpuſcles were ſuppoſed to be of the largeſt ſize in the quotidian form of fever, ſmaller in the tertian, and leaſt of all in the quartan type‡.

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* Celſus *De Medicina*, lib. 1.

† "Manantia corpuſcula per inviſibilia foramina ſubſiſtendo iter claudunt."

‡ Cœl. Aurel., lib. 1, cap. 14, & Celſus *Prefat.*

Themiſon referred all diſeaſes to a too rigid or too relaxed a ſtate of the ſolids—*ſtrictum nimis vel laxum*—fevers he ſuppoſed to originate in the former ſource. This doctrine agrees with that of Hippocrates and Aſclepiades, in the idea of obſtruction, though it refers the cauſe to the ſolid inſtead of the fluid parts, and ſeems to anſwer, in a great meaſure, to the *ſpaſmodic* doctrine of modern times. Galen overturned this hypotheſis, and revived the humoral pathology of Hippocrates, though with conſiderable modifications and additions.

Galen himſelf diſcuſſes the queſtion concerning the proximate cauſe of fever at conſiderable length. He looked upon heat to be the moſt characteriſtic ſymptom, as before obſerved, but thought that it muſt be communicated to the heart in order to conſtitute fever; this is the organ, therefore, in which he places the ſeat of the diſeaſe. In the developement of his doctrine, he has recourſe to the hypotheſes of almoſt every preceding writer. Thus, he admitted three diviſions of fever; as the *hectic*, in which the ſolid or containing parts were concerned; the *humoural*, or thoſe where the cauſe of the diſeaſe was lodged in the fluids; and the *ephemeral* or tranſitory ſpecies, cauſed, as he ſuppoſed, by a too rapid motion or diſturbance of the animal ſpirits. The *humoural* fevers were ſuppoſed to vary again, according as the blood, bile, phlegm, or other humour, was particularly vitiated.—Ætius was a follower of Galen, except with regard to the *ſynochus* or purely inflammatory fever, which he aſcribed to an ebullition or efferveſcence of the blood, and not to any depraved ſtate of the vital fluid.—Athenæus, of the *pneumatic ſect*, ſuppoſed a putreſcent ſtate of the fluids to be the eſſential cauſe of fever, an idea that has been very prevalent in modern times; and Hippocrates himſelf obſcurely hints at it.

Diocles Caryſtius, according to Galen*, looked upon fever to be never a primary diſeaſe, but always a ſymptom of ſome other affection; an idea that appears to be well founded, if by the term fever be meant only the diſordered ſtate of general vaſcular action, which I believe to be as truly ſecondary and ſymptomatic in idiopathic fever, as it is in other inflammations.

Avicenna, and the reſt of the Arabian ſchool, adopted in a great meaſure the doctrines of Galen, with modifications that ſcarcely merit notice.

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* Galen Op., tom. 4, p. 438.

Thus things ſtood till the revival of letters in the ſixteenth century, when the chemical ſect of phyſicians appeared, at the head of whom ſtands Paracelſus. This extravagant writer, in explaining the nature of diſeaſes, decried the doctrines of the Galeniſts, and introduced into pathology a jargon of chemical terms, as ſulphur, nitre, mercury, acid and alkaline, &c.; not with the preciſe ſignification in which they are at preſent uſed, but in the moſt vague and ideal manner. To this, the *mechanical* theory ſucceeded, and the doctrine of obſtruction was revived. The mechanical and chemical doctrines were now blended in a thouſand different ways, and occupied the attention of phyſicians down to the time of Stahl and Hoffman.

Van Helmont's *Archæus*, which he employed as his principal agent in explaining the phenomena of fever, as well as of other diſeaſes, was only a wild adoption of the *ſentient principle* of Hippocrates, and analogous in great meaſure to the *Vis Medicatrix Naturæ* of Galen and others, and to the *Autocrateia* of Stahl.

The diſcovery of the circulation of the blood introduced material alterations into the theory of phyſic, and of courſe into that of fevers, which conſtitute ſo large and important a part of the ſcience. The brain and nerves, which before had been greatly overlooked, began about this time to aſſume much conſequence both in phyſiology and pathology. Borelli appears to have been the firſt who aſcribed the proximate cauſe of fever to a derangement in the functions of this part of the animal frame*. Willis ſucceeded in the ſame rout: admitting the very queſtionable exiſtence of a nervous fluid as the principal agent of vitality, he ſuppoſed an acrimony or vitiated ſtate of it to conſtitute the immediate cauſe of fever. Others conceived the idea of a laxity of the nerves at their origins in the brain, whence an incongruous matter was admitted into them, diſordering their functions, and diſturbing in conſequence the actions of the whole ſyſtem†.

It was the opinion of ſome of the mechanical phyſicians, that in fever there was an augmented velocity of the blood in the large veſſels, with a diminiſhed velocity in the ſmall ones, the effect of obſtruction; and that this retardation of the circulation in the extreme veſſels occaſioned an increaſed impulſe of the heart, in order to overcome the impediment to the free and equable tranſmiſſion of the blood.

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* *De Motu excandeſcentiæ febrilis.*

† Cole *Nov. Hypoth. de Feb.* c. v.

Hoffman imagined the proximate cauſe of fever to conſiſt in an univerſal ſpaſm of the nervous and fibrous ſyſtem: he thus expreſſes himſelf; "formalem febris rationem, ſive ut ita loquor, fundamentalem cauſam conſiſtere in ſpaſmodicâ univerſi generis nervoſi et fibroſi affectione, quæ maximè ex medulla ſpinali procedit, et ſucceſſivè ab exterioribus ad interiores partes vergit*." And again—"Febriles motus nihil ſunt aliud quam univerſales ſyſtematis vaſculoſi nervoſique ſpaſmi†."

Dr. Cullen, while with Hoffman he admitted the exiſtence of a ſpaſm on the extreme veſſels, aſſerted a prior link in the chain of phenomena, viz., debility or collapſe of the brain, propagated eſpecially to the extreme veſſels, and produced by the ſuppoſed ſedative nature of the remote cauſes, which, as before obſerved, he limited chiefly to two ſources, human contagion and marſh miaſmata. This ſpaſm he conſidered as a kind of re-action induced by the *vis medicatrix naturæ*, and which in its turn occaſioned increaſed action of the heart and arteries, by which the loſt energy of the brain was reſtored, and the ſpaſm of the extreme veſſels finally overcome.

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* Hoffmanni Op., tom. xi, p. 10, 4to.

† *Conſult. et Reſpons. Med.*, cent. 2.

Of the hypotheſes now mentioned, ſome are merely conjectural, founded on the ſuppoſition of a ſtate of the ſyſtem which has never been demonſtrated to exiſt. Of this deſcription are the *error loci* of Eraſiſtratus, the *corpuſcularian* doctrine of Aſclepiades, the *humoural* doctrines of Galen and his followers, the *chemical* principles of Paracelſus and ſucceeding chemiſts, the *lentor* and *obſtruction* of the mechanical ſect, the *laxity* of Cole, &c. Others take up ſome one prominent and conſpicuous ſymptom, and conſider it as conſtituting the primary and eſſential part of the diſeaſe; ſuch as the exceſs of heat, the profuſe ſecretion of bile, the ſpaſmodic conſtriction of the ſkin, or the debility or rather inability for muſular exertion; all of which are effects or conſequences only, and not primary links in the chain of phenomena of fever.

There is ſcarcely any part of the body

which has not been aſſigned, by one writer or another, as the ſeat of fever. As long as the humoural pathology kept poſſeſſion of the ſchools, the blood and other fluids were accuſed as the fundamental ſeat of fever; ſome imaginary lentor impeding its free tranſmiſſion, or acrimony vellicating the nervous fibres, and ſtimulating them into inordinate action; or ſomething equally wild, and beyond the regions of ſenſe, being conſidered as the immediate exciting cauſe of all the phenomena.

Van Swieten, after Boerhaave, calls fever "morbus cordis*."—Willis defines it, "motus inordinatus ſanguinis, ejuſque nimia effervefcentia;" and he compares this ſtate of effervefcence to the fermentation of vinous liquors†. This appears likewiſe to have been the opinion of Sydenham, who talks a great deal of this ſuppoſed fermentation depurating the blood from noxious matters, and of diſcharging them by the different emunctories, as the chief intention of nature in the production of fevers; an intention which was to be ſeconded, not counteracted, by the phyſician.—Morton, the great cotemporary and rival of Sydenham, entertained the ſame general notion as to the immediate exciting cauſe of fever; "deleterium quid in ſpirituum ſyſtemate delitefcens," occaſioning efferveſcence and expanſion of the blood; they differed widely, however, as to the means of *exorciſing* and expelling this turbulent ſpirit*.—Boerhaave blended this doctrine with the notion of *lentor*, which, of courſe, furniſhed a new indication of cure.—Stoll derives fever "ab irritabilitate cordis et arteriarum aucta et exſtimulata†."—Baglivi conſiders the meſentery as a frequent ſeat of fever;—Sylvius, the pancreas;—others, the *primæ viæ*. In fact, there is no end to the ſpeculations that have been made on the ſubject.

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* Com. in Aph. 573.

† De Feb., cap. 2.

The unſatisfactory nature of the various theories thus propoſed, and their manifeſt inſufficiency to explain the numerous and diverſified phenomena of the diſeaſe, have led many modern writers to reject them altogether, and indeed almoſt to queſtion the poſſibility of any ſatisfactory ſolution of the difficulty being given.

Selle, in his *Rudimenta Pyretologiæ*, ſays,

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* *Pyretologia* Mortoni. *Exerc. Prim.*, cap. 1.

† Aph. vi. *De Cogn. et Cur. Morb.*

"with regard to the abſolute nature of fever, as the ſource from which all the phenomena ſpring, authors are not agreed; nor ſhall I pretend to penetrate ſo obſcure a ſubject*."—"The genuine nature of fever," Lieutaud obſerves, "is involved in the greateſt myſtery; nor perhaps are its varieties better underſtood†."—Burſerius gives his opinion, that no proximate cauſe of fever can be laid down that ſhall embrace all its varieties.—"What the real derangement in the ſyſtem is, which produces the external appearances in fever," ſays Dr. Fordyce, "is not at all known: it is a diſeaſe the eſſence of which is not underſtood‡."—Dr. Jackſon, in his *Treatiſe on the Fevers of Jamaica* (p. 109), obſerves that, "the ſymptoms of fever are undoubtedly indications of a derangement of the body from its healthy ſtate; but when we have ſaid this, we can ſay no more. The nature of the derangement which, in its firſt beginning, is not obvious to the

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[*] "Quod autem ad abſolutam febris naturam attinet; quæ quidem ſub omnibus febrim conſiderandi et denominandi modis ei ſemper tanquam primum fundamentum, ex quo omnia phenomena conſequuntur, competit, de ea autores non conveniunt; nec ego has tenebras penetrare audeo."—*Rud. Pyret.*, 8vo, p. 93, ed. 3, 1789. Berol.

[†] "In Cimmeriis latet tenebris genuina febris indoles; nec forte dilucidius patent ejus differentiæ."—Lieutaud *Syn. Univ.*, ſect. 1.

[‡] Fordyce *Firſt Diſſ. on Fever*, p. 118.

ſenſes, neither the antients nor the writers of the preſent age have, as yet, been able to aſcertain." And he elſewhere remarks, that " the proximate cauſe of fever is a ſubject of a dark nature. It is ſuch, perhaps, as our limited capacities will never develope*."

All authors almoſt have noticed the affection of the *nervous ſyſtem* among the leading phenomena of fever. Huxham, though a rigid humoural pathologiſt, obſerves, " that contagion ſeems to affect not only the blood, but *primarily* alſo the *animal ſpirits:* I think the ſudden damp, weakneſs, tremblings, and great dejection of ſpirits at the very attack, evidently ſhew it†." Dr. Cullen makes much uſe of the *nervous ſyſtem* in his explanation of the phenomena of fever, ſuppoſing the remote cauſes to act on this ſyſtem generally, and upon the brain as a part of it; though he by no means looks on fever as a topical affection of this organ, but only that the brain ſuffers in common with the reſt of the nervous ſyſtem: ſtill leſs does he refer it to inflammation, or an excited ſtate of the brain, but to the reverſe, viz., a ſtate of collapſe or debility. It is plain, however, that an affection or diſturbance of the whole nervous ſyſtem is without difficulty referable to a topical diſordered ſtate of the brain itſelf.

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* Treatiſe on the Fevers of Jamaica, p. 133.

† Eſſ. on Fevers, cap. 8.

The Daniſh profeſſor *Tode*, in an Inaugural Diſſertation publiſhed at Copenhagen in the year 1769*, a work quoted by Burſerius, but which I have not ſeen, is much more pointed in accuſing the brain as the ſeat of fever; aſcribing the diſeaſe to an irritation of this organ. If the ſtimulus producing the irritation finds nature ready and diſpoſed for action, inflammatory fever, he ſays, ariſes; but if the ſtimulus, either from the violence of the diſeaſe, or the debility of nature, be in ſome meaſure blunted, then the fever is of a putrid kind—theſe, he ſays, are the only eſſential varieties of fever. According to him, therefore, the proximate cauſe of fever is ſome kind of irritation of the *ſenſorium*, communicated in different ways to all the other parts of the body;—not ariſing in the heart, nor in the ſmall veſſels, nor in the membranes, nor branches of nerves; but in the meditullium of the brain itſelf, and propagated from thence to other parts. This idea is objected to by Burſerius, and treated by him with very little reſpect; but, as it appears to me, without ſufficient reaſon. "No perſon in his ſenſes," ſays Burſerius, "can give his aſſent to this opinion of Tode. For who is ſo dull as not immediately to perceive that, were the *ſenſorium commune* irritated, as he ſuppoſes, a derangement of all the ideas and powers of the mind, ſpaſms, convulſions, and pains, ought to be excited, rather than febrile motions?"—We have however indubitable proof, in the caſe of hydrocephalus, that inflammation (or irritation as Tode calls it) of the brain may exiſt without either ſpaſms, convulſions, or any great derangement of the mental powers; although there is at all times ſufficient evidence, both in hydrocephalus and fever, to ſhew that the brain is labouring under diſeaſe.

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* *Specimen Inaugurale de duplici febrium indole.*

Authors in general, though they have not expreſsly ſaid, nor perhaps thought, that the brain itſelf was primarily and organically diſeaſed in fever, ſcarcely ever fail to include the diſturbance of its functions, by one expreſſion or another, in the general character of the diſeaſe. Thus Hoffman ſays, "meâ ſententiâ, febres referri mereantur ad *adfectus generis nervoſi:* And Boerhaave, and after him Van Swieten, were of opinion, that the proximate cauſe of *intermitting* fever conſiſts in a viſcidity of the arterial blood, " and perhaps alſo a *ſluggiſhneſs of the nervous fluid* deſtined to go to the heart." In the ſame light are to be conſidered the "*ſemper virium proſtratio* major quam a virium vitalium gradu foret exſpectandum" of Sauvages; the "*corporis gravitas*" of Vogel; the " virium artuum *ſumma proſtratio*" of Sagar; the "*vires imminutæ*," and the "*ſenſorii functiones turbatæ*" of Cullen, &c. &c.—all of them indications of a derangement of the peculiar functions of the brain, and, of courſe, arguing a diſordered ſtate of this organ. I do not ſee, indeed, how the alleged diſturbance of the *animal ſpirits*, the *ſluggiſhneſs of the nervous fluid*, the *weakened nervous energy*, and the like figurative expreſſions, are to be otherwiſe underſtood, than as referring to the ſtate of the brain or common ſenſory.

Particular forms and ſtates of fever have often been referred by writers to the brain, as their ſeat and origin. Hippocrates looked upon the brain to be the focus of ardent fever. And Lieutaud ſays, " that *malig-*

*nant* fever ſeems, beyond controverſy, to have its chief ſeat in the brain and nerves, the functions of which, as long as the fever ſubſiſts, are never regularly performed. "It is in this point of view only," he obſerves, "that malignant fevers can be diſtinguiſhed from others[*]."—Upon this it may be remarked, that although the functions of the brain are conſiderably more diſordered in malignant than in other fevers, it points to no eſſential difference between them, but only marks a greater degree of topical affection. We have already ſeen that the true pathognomonic ſymptoms of every fever, even of the mildeſt kind, are referable to a diſordered ſtate of the ſenſorium as their ſource.

I have lately been much gratified by the peruſal of a pamphlet on the ſubject of fever, publiſhed upwards of twenty years ago, and which ſeems to have attracted leſs notice than it merits[†]. In this the author aſcribes the principal phenomena of fever to a congeſtion of blood within the head. His idea is, that the proximate cauſes of epilepſy and of fever are nearly the ſame. With Dr. Cullen, the author refers the remote cauſes of fever to only two ſources, human effluvia and marſh miaſmata; "theſe," he ſuppoſes, "are received into the circulation by the lungs, or ſome other channel, and there prove a ſtimulus to our veſſels, but more eſpecially to thoſe of the ſeat and ſource of ſenſation, the brain; in conſequence of which, the action of thoſe veſſels is increaſed, a greater than their natural proportion of blood is induced into them, which proportion continuing to increaſe as long as the ſtimulus continues to operate, at length arrives at ſuch a height, as materially to interrupt the functions of the brain, and the due diſtribution of the nervous influence. In this ſtate, to preſerve an organ ſo eſſential to life, ſome effort becomes neceſſary to remove the impediment; and this effort beginning with a ſhivering fit, conſtitutes what phyſicians have agreed to call fever*."

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[*] "Ultra omnem dubii controverſiam poſitum eſſe videtur, febrem malignam præcipuam ſedem habere in cerebro et nervis: quorum munia, hac vigente, nuſquam lucida perſtant, nec ſub alio conſpectu a cæteris febribus ritè diſtingui poteſt."—*Prax. Med.*, lib. 1, ſect. 1.

[†] *Medical Sketches*, Part 1. By Richard Pew, Member of the Royal Medical Society, Edinburgh: 8vo, 1785. Bew, London. Dr. Pew now reſides at Sherborne, in Dorſetſhire.

That the congeſtion here contended for

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* Pp. 102-103.

by Dr. Pew actually takes place in fever, can not, I think, be queſtioned: all the phenomena of the diſeaſe evidently ſhew it. And that ſuch congeſtion is of an active kind, and induced by an inflammatory mode of acting in the veſſels of the brain, appears from the increaſed action of all the arteries going to the head, as well as from the heat and throbbing of the part itſelf and its veſſels; and more clearly ſtill by the diſeaſe ſo often terminating in a deſtruction of the organization of the brain, as proved by the diſſections above referred to. Whether the author is right in his explanation of the mode of acting of the remote cauſes, may be diſputed, for the reaſons already given. Many of the exciting cauſes of fever are either of an immaterial kind, or evidently act without being taken into the ſyſtem*.

In fever, the laws of acting of almoſt the whole ſyſtem are manifeſtly changed from the healthy ſtate; hence proceeds the diſturbance of ſo many of its functions, from the mere agency of the ordinary ſtimuli. This it was natural to expect from a change in the condition of the brain, upon the ſtate of which all the functions ſo materially depend. Dr. Wilſon, the lateſt ſyſtematic writer on the ſubject, to whom we are indebted for a very minute and accurate hiſtory of fever and its varieties, conſiders this change in the laws of action, or of excitability, as he terms it, which takes place in fever, as the proximate cauſe of the diſeaſe; but "how the remote cauſes act in inducing it, and on what change in the living ſolid ſuch a change in the laws of excitability depends, we neither can," he thinks, "nor ever ſhall, perhaps, be able to determine*."

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* See page 117.

This difficulty ariſes, as it appears to me, from not diſtinguiſhing ſufficiently between the primary and ſecondary ſymptoms of the diſeaſe. If the general affection of the ſyſtem in fever be, as I have endeavoured to ſhew above, only ſymptomatic of a topical affection of the ſenſorium, the difficulty in a great meaſure vaniſhes: we muſt no longer, with Dr. Wilſon and the generality of authors, look upon fever as an univerſal diſeaſe†, however numerous and diverſified its ſymptoms. This very diverſity of character, indeed, affords to my mind one of the ſtrongeſt arguments in favour of the doctrine I am contending for; ſince no affection of any organ or part of the body, other than the brain, could influence ſo materially the principles of action in the ſyſtem, or excite ſo general a diſturbance of its functions.

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* Treatiſe on Febrile Diſeaſes, &c., by A. P. Wilſon, M.D. 8vo, 1799; vol. 1, p. 530.

† "Simple fever," ſays Dr. Wilſon, "is the only general diſeaſe, and may be defined an exceſſive excitement or debility of all the functions, without any local affection." (Ibid.)

The only other author I ſhall quote on this occaſion, is the late Dr. Home of Edinburgh, who deſcribes with great minuteneſs the ſymptoms of a low nervous fever as occurring in his own perſon, and in which his feelings, as well as the effects of remedies and other circumſtances, forcibly pointed out to him the exiſtence of inflammation in the brain, although none but the ſymptoms ordinarily obſerved in theſe fevers were preſent. The caſe altogether is highly intereſting and inſtructive; I ſhall therefore make no apology for tranſcribing it.

“ *June* 7th. I roſe,” ſays Dr. H., “ with a ſlight *pain in my head.* Being uſed to the cold bath, I went in that morning, and rode about ten miles that night, pretty hard, which I perceived *hurt my head* very much: that night I had a grewing. Next day I had a *ſevere head-ach*, and quick pulſe: on the ninth, my *head-ach* was exceedingly ſevere.

" 10th. Symptoms the ſame; my pulſe was rather ſoft and weak: I was blooded; and when I had loſt eight ounces, I fainted. This never happened to me before nor ſince, having eaſily borne repeated bloodings. That night my temples were ſhaved, and bliſters as big as the palm of my hand laid to them.

" 11th. Next morning the pain gave me no great trouble, but a *giddineſs* remained. My eye-balls, on being preſſed, were painful, and my eyes could not bear the leaſt ray of light. There was no external inflammation on them: the leaſt noiſe, which could ſcarcely have been heard at another time, gave me intolerable pain. My pulſe was never above 100, and always ſoft and weak. I had all along a great debility, and frequent ſighing; my tongue was always white and moiſt, and no great drought. I never got paſſage but with an injection. The ſymptom which gave me the greateſt uneaſineſs was, a *continual watchfulneſs;* ſo that, for the firſt eight days, I never had the leaſt appearance of a ſleep; and for the ſix following days, I dozed perhaps for three or four hours in the night very confuſedly. This night my whole head was bliſtered : this relieved my head conſiderably, eſpecially as it run plentifully for eight or nine days.

“ 12th. The ſame : this fever had the appearance of a nervous fever in all its ſymptoms, therefore was ordered *Emulſ. camph. coch.* 1. *tertia quaque hora.* I threw up a part of the firſt doſe, but what remained ſweated me four hours. During that time I was vaſtly uneaſy, and almoſt delirious, and therefore would take no more.

“ 13th. Much the ſame ; head quite diſtinct. As I had got no ſleep for many nights, ℞. *Pulv. caſtor. gr.* xv. *mucilag.* g. *tragacanth.* q. ſ. *ut* f. *bol. cap.* h. ſ—℞. *Sal. abſynth.* ℈ij. *ſucc. limon.* ℥j. *aq. fontan.* ℥iij. *ſacch. alb.* ʒj. M. Poultices were applied to my feet : I ſweated two or three hours, but was very uneaſy, and ſlept none.

“ 14th. I got up this morning to change my bed on account of noiſe, and without having the leaſt nauſea, or ſign of foul ſtomach, I threw up a good deal of bile, and afterwards aſſiſted it by drinking warm water. I took a vomit of *tinct. ipecac.*, which came off immediately, without producing any previous ſickneſs. It gave me one looſe ſtool, which relieved my head conſiderably. ℞. *Bol. ex caſtor., addend. ſal. abſynth.* gr. v. My head was very uneaſy this night; and I was convinced that the *caſtor* hurt me, without giving me ſleep. I felt an unuſual coldneſs that night. The *uneaſy feelings of my brain* were ſo ſtrong, that I was fully convinced my diſeaſe was an inflammation of that part; and therefore I declined all heating medicines, which I was ſenſible had heightened the ſymptoms. On the 15th, much the ſame, and dozed a little that night; as likewiſe two or three hours on the 16th. My pulſe came to 94.—17th. Pulſe very ſoft, weak, and at 90. During the few hours that I ſlept that night, my head was carried, and I had a ſlight delirium, which was owing, probably, to the little ſleep which I had got of late. In the morning I was again diſtinct enough; my fever abated by degrees, without any viſible criſis, and left me exceedingly weak about the 20th. About three days afterwards, there was a white milky ſubſtance fell to the bottom of my urine twice or thrice; but I did not then look at it as the criſis of my fever; for it came out at once with the firſt of my urine, and fell directly to the bottom: I rather conſidered it as the nutritious part of my juices, which had run off from a mere laxity of the ſecretory veſſels, eſpecially as I had this very ſymptom ſome years before, when reduced by a hectic fever.

" For three weeks after the fever was gone, I felt a pain in my head when I turned it; my eyes were ſore to the touch, and objects danced before them: my ears were ſenſible to the leaſt noiſe; my head was giddy, had an uneaſy pulſation in it when I laid it on the pillow, and I felt an unuſual heavineſs in it when I was on the point of falling aſleep, and after I had juſt awakened. For two or three days after the fever went off, I had an unuſual acuteneſs of ſmell and taſte, ſo that I felt a ſtrong flavour from bread.

" From conſidering the whole train of ſymptoms in this diſeaſe, it appears plainly to have been an inflammation of the brain, I mean of its cortical part; for the medullary has no blood-veſſels ending in it, and ſeems to conſiſt alone of nervous filaments. That this was an inflammatory diſeaſe, appeared more certainly afterwards; for I was one night taken ill in the ſame manner, but more violently: I was immediately bled twice, and the ſymptoms ſoon diſappeared. We may, I think, determine, that though the *pia mater* was probably affected from its connections with the brain, yet that the *dura mater* was not; otherwiſe the pulſe would have been hard, which is a neceſſary circumſtance attending the inflammation of this, and all other membranous parts. It is no wonder, that the extremities of the external veſſels kept open ſo long after the bliſter, conſidering that the circulation through the internal was ſtopt, in ſome degree.

" This fever had, however, a ſtrong ſimilitude to the low nervous fever in the weak pulſe, confuſion of the head, frequent ſighing, depreſſed ſpirits, and ſinking under the evacuation: nothing but my own ſtrong feelings at the time, and the increaſe of the ſymptoms afterwards by the nervous medicines, could have perſuaded me of its being different. The weakneſs of the pulſe was probably owing to a ſtoppage of the ſecretion of the nervous fluid in the cortical part of the brain, from an obſtruction of the glands which ſerve for that purpoſe, by the turgid blood-veſſels. From this caſe, there appears a great probability, that all low fevers ariſe from, or are attended with, an obſtruction of the brain.

"But how happened it, when the powers of motion and ſenſation are allowed by all to depend on the brain, nerves, and nervous fluid, that the former were ſo weak, and the latter ſo ſtrong? Were the nerves of the eyes, ears, palate, and noſe inflamed, ſtretched, and rendered more ſenſible? I think we cannot adopt that ſolution, as no ſigns of inflammation appeared in theſe parts. Were the nerves of theſe parts leſs compreſſed at their origin in the brain? Of that we have no proof. Are the powers of motion and ſenſation ſituated in different parts of the brain? I think we have facts ſufficient to warrant that concluſion. Motion ſeems to ariſe, and be in proportion to the ſecretion in the cortical or glandular part of the brain; whereas ſenſation ſeems, by experiment, to have its ſeat in the *corpus calloſum*, and muſt be in proportion to the tenſion, and other circumſtances of that part, as well as the quantity of ſecreted fluid. Hence that part muſt feel more acutely, if its tenſion is increaſed in a greater *ratio* than the nervous fluid is diminiſhed. In the preceding caſe, we find the ſenſation of feeling more acute, while the effects of the motive powers were often more weak. The want of ſleep was owing to the flux of blood to the head, a conſtant effect of that cauſe: nothing was capable of producing ſleep in that ſituation, but what could have inverted that motion, and have turned it to the feet. An artificial inflammation excited there, might, in part, have anſwered this end.

"When ſuch complaints firſt appear, bleeding is the proper remedy: after the diſeaſe is fixt, it ſeems rather to do harm. Frequent dry cupping on the ſhoulders or thighs cannot fail to be beneficial: this application has very ſtrong effects, and is too much neglected by modern phyſicians.

"The heating nervous medicines were found hurtful in this caſe*."—

This is a moſt intereſting hiſtory, not merely in reſpect of its influence on the theory of fever, but alſo in the important practical rules which it ſuggeſts. Great attention undoubtedly is due to an opinion derived from the feelings of a perſon converſant with diſeaſes and the nature of the animal œconomy. The ſenſations ariſing from inflammation are ſo ſtrongly characterized as hardly to be miſtaken, even by an uninformed patient, when once pointed out to him. It is not likely, therefore, that a phyſician of great experience ſhould have ſo erred. The local pain, the throbbing felt within the head, the increaſed ſenſibility of the different organs of ſenſe, the diſturbed ſleep, the derangement of the other functions of the brain, the ſalutary effects of bleeding and bliſtering, though not abſolutely curative, and, on the other hand, the ill conſequences experienced from heating and ſtimulating medicines, together with the diſpoſition to headach, giddineſs, and morbid ſtate of ſenſibility remaining for weeks after the ceſſation of the fever, are all circumſtances which, in addition to the freedom of other organs from diſeaſe, ſeem to ſhew in the cleareſt manner the truth of Dr. Home's conjecture, that an inflammatory action was going on in the blood-veſſels of the brain. And if this be admitted with regard to the preſent caſe, I do not ſee how it is poſſible to refuſe aſſent to the propoſition, that other fevers of the ſame deſcription depend on the like cauſe. For there was in this caſe nothing peculiar in the train of ſymptoms; nothing to diſtinguiſh it from the whole tribe of nervous or low fevers, or which at all indicated the preſence of inflammation in the brain, as an accidental occurrence merely. The ſymptoms from which Dr. Home deduced his opinion of the exiſtence of inflammation in the brain, are preſent in every fever, in greater or leſs degree.

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* *Med. Facts and Experiments*, 8vo, 1759.

This caſe of Dr. Home has been quoted by Selle, in his *Rudimenta Pyretologiæ*, for the purpoſe of controverting the concluſion drawn by Dr. H., namely, that this and another ſimilar one (which terminated fatally, and in which collections of purulent matter were found in the ſubſtance of each lobe of the brain, and alſo in the cerebellum), although they reſembled very ſtrongly the low nervous fever, were, in reality, caſes of phrenitis or topical inflammation of the brain. "Why may not the ſymptoms mentioned," he aſks, "be referred to mere congeſtion of blood in the ſuperior parts of the body? The collection of purulent matter obſerved in one inſtance was rather," he thinks, "an effect than a cauſe, and denoted a complication of diſeaſe. Neither the habit of body of the patients, the nature of the remote and prediſpoſing cauſes, nor the method of cure found beſt adapted to the diſeaſe, according to the experience of the moſt ſkilful practitioners, points out ſuch a local cauſe of the fever. Who will ſay," he adds, "that ſtimulants and corroborants are proper remedies for the removal of inflammation?

Yet theſe are the remedies which both reaſon and experience approve, as beſt adapted to the cure of this fever." He then goes on to aſſign ſome unknown acrimony irritating the nerves, as the material cauſe of this fever; and he gives a caſe which he ſuppoſes was occaſioned by arthritic acrimony, the patient having been previouſly ſubject to gouty attacks.

Theſe objections made by Selle to the idea of ſenſorial inflammation being the real cauſe of the ſymptoms in the caſes alluded to, are not, as it appears to me, of any great weight; while the cauſe aſſigned by himſelf may be rejected as entirely gratuitous, and without a ſhadow of proof to ſupport it. Inflammation is not peculiar to the vigorous and robuſt, but is found occaſionally in every kind of conſtitution: there is even reaſon to ſuppoſe that it is more frequent in perſons of infirm habits, as ſuch are generally more irritable, and conſequently more open to the impreſſion of morbific cauſes. And experience of late years has abundantly ſhewn, that inflammation, when it takes place in ſuch habits, is often more ſucceſsfully combated by ſtimulant and corroborant remedies, than by evacuations. No argument, therefore, againſt the opinion in queſtion can be fairly drawn from this ſource.

That the congeſtion within the head in Dr. Home's caſe was not, as Selle ſuppoſes, ſimply the effect of an increaſed determination of blood towards the upper parts of the body, appears, I think, from this circumſtance, that the uneaſy feelings in the head, and the acuteneſs of the ſenſes, did not leave the patient along with the fever, but remained for ſome weeks after; which is quite analogous with the inflammation of other organs, which, we find, do not loſe their morbid ſenſibility, and return to their uſual mode of acting, till after a conſiderable interval.

Dr. Home ſeems to conſider as a proof that his diſeaſe was not in reality, though in appearance, the low nervous fever, the ſymptoms being aggravated by the uſe of ſtimulating *nervous* remedies. But the utility of medicines of this deſcription, and even of wine in theſe fevers, ſtands on very queſtionable grounds; unleſs under conſiderable reſtrictions, and towards the latter periods of the diſeaſe, when the force of arterial action has declined, and ſome degree of ſtupor has ſucceeded to the morbid ſenſibility which generally prevails in the early ſtages. That they often produce the very inconveniences in the low nervous fever, which Dr. Home deprecates in his own caſe of ſuppoſed phrenitis, I have had many opportunities of remarking, where attention was not paid to the circumſtances above mentioned. And, indeed, obſervation has taught practitioners of the greateſt experience to employ wine and cordials with a much more ſparing hand at preſent, than was cuſtomary a few years back, when the doctrine of debility being the eſſential part of fever was in vogue.

The ſame author gives us the hiſtory of an epidemic fever that prevailed among the Britiſh troops in Flanders, in the year 1742, and which he ſtyles a *ſlow fever**. It uſually made its attack in this way: The perſon loſt his quickneſs of mind, and was very ſlow at giving his anſwers. This was ſo ſtrong a diagnoſtic ſymptom, that Dr. H. knew with certainty when any one was in this fever, by the firſt ſentence he ſpoke. This gradually degenerated into a ſtupor, without any great pain in the head, wherein he continued often for fourteen days. The uſual febrile ſymptoms ſucceeded. The eyes were in a ſtare, and appeared very dull. The pulſe did not differ ſo much from the healthy ſtate as one would have expected from the other ſymptoms; being only a little quicker and lower. The patients generally complained of a great pain below the ſtomach. At length they voided their excrements involuntarily. A hiccup and *ſubſultus tendinum* often came on before death. Blood-letting was not practiſed, the pulſe, *being rather weak from the beginning*, not indicating it. Sudorifics were uſeful, and particularly bathing the feet in warm water at bed-time. Of thoſe that died, the bodies of two only were ſubjected to diſſection. In one of them, the ſtomach and ſmall inteſtines exhibited marks of inflammation; but the head was not examined. In the other, ſinuſes full of a greeniſh pus, in ſome places of a thin, in others of a thicker conſiſtence, were found in each lobe of the brain; and the matter, which amounted altogether to about four ounces, had eaten its way, the author ſays, into the ventricles, and filled them. Some matter was likewiſe found in the cerebellum. The abdomen and thorax exhibited nothing unuſual.

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* *Med. Facts and Exp.*, 8vo, 1759.

Here, then, is an inſtance of epidemic fever, of the *low kind*, exhibiting after death unequivocal marks of previous inflammation in the brain. But what were the ſymptoms in this individual caſe?—Were they ſuch as to diſtinguiſh it from others of the ſame epidemic, indicating in a peculiar manner the preſence of topical inflammation of the brain, according to the ordinary characters laid down of this diſeaſe?—by no means. "The patient had been," Dr. Home ſays, "in one of theſe ſlow fevers for a month; and was firſt ſeized with a vomiting and purging, which yielded to a vomit and injections. He lingered in this fever, ſometimes complaining of a ſmall pain in his head, till he was ſent to the hoſpital, where, continuing two days in a low way, he was ſeized with ſlight convulſions, and expired."—In no caſe of fever, probably, could there be leſs reaſon to look for diſorganization of the brain, than in the one before us. No raving, nor violent pain in the head, no redneſs of the eyes, not even delirium, are mentioned among the ſymptoms.

Dr. Home, in his comment on this caſe, remarks, "that if we are to judge by all the ſymptoms, the brain was the principal ſeat of diſeaſe; but we dare not conclude," he ſays, " that every brain was affected in this manner. In this caſe, we ſee the ſubſtance of the brain converted into pus (and that too of no ſhort ſtanding, ſince the ſinuſes were ſo many), without any ſudden or preſſing ſymptoms. What ſhall we ſay," he adds, " of matter formed in the cerebellum, where the leaſt diſorder has hitherto been looked on as mortal? It overturns the doctrine of the ſchools:"—it certainly does ſo, and not only with regard to this particular point, but to the whole doctrine of fever. It proves, with others, that inflammation and ſuppuration may take place in the brain, with ſcarcely any of the ſymptoms commonly aſſigned to phrenitis; without any, in ſhort, but the mildeſt ſymptoms of fever. From the event of this caſe, it is probable that, had other diſſections been made, ſimilar appearances might have preſented themſelves. Yet we are not at liberty to infer, for reaſons already ſtated*, that ſuch would have been generally, or even frequently, the caſe. When, however, we conſider how rarely, in compariſon with the whole of fevers, the ſtate of the brain has been examined after death; and how often, in the examinations which have been made, decided marks of inflammation have been perceived, a ſtrong ground of ſuſpicion, at leaſt, is afforded, that the inflammation here was not merely an accidental occurrence, but the primary cauſe of the febrile ſymptoms, or rather the diſeaſe itſelf.

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* See page 174.

## CHAP. IV.

### OF THE DIAGNOSIS OF FEVER.

UPON the principles above laid down, it is plain that the diagnoſis of fever muſt be formed in a different way from what has hitherto been done by writers on methodical noſology. The diſordered vaſcular action and morbid exceſs of heat that have in general been admitted as chiefly characteriſtic of the diſeaſe, afford no certain criterion by which proper fever can be diſtinguiſhed from various other affections. This has been perceived by later noſologiſts, and they have accordingly found it neceſſary to accompany their definitions of fever with other leſs fallacious ſigns. With this view, Sauvages, to the ordinary characters of febrile affection, as increaſed heat and frequency of pulſe, has added, ‘ proſtration of ſtrength, greater than the ſtate of the vital powers would ſeem to indicate*.’ Sagar's character of fever is nearly ſimilar; Dr.

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* “ Semper virium proſtratione majori, quam á virium vitalium gradu foret expectandum.”

Cullen alludes to the ſame thing, though in a leſs pointed manner, and characterizes fever by the *pyrexia*, or febrile ſtate, taking place without any primary local affection, with preceding *languor*, *laſſitude*, and other ſigns of *debility*. Linnæus* and Vogel† define fever as conſiſting merely in increaſed heat and velocity of pulſe.

It is ſcarcely neceſſary to repeat here, that the ſkin and pulſe in fever afford only ſymptoms that are common to them with many other affections, and conſequently not pathognomonic. Proſtration of ſtrength, though an invariable concomitant of fever, is not of itſelf ſufficient, ſince this alſo belongs to many other diſeaſes, as is very remarkable in inflammations of the ſtomach and ſmall inteſtines, and perhaps of the vital organs in general. The characters which ſerve eſpecially to diſtinguiſh fever, are to be ſought for in the functions of the ſenſorium, joined with thoſe that belong to inflammation generally; which laſt, as far as the general vaſcular ſyſtem is concerned, have been aptly termed *pyrexia*, as particularly expreſſive of the heat and irritated vaſcular action which, I believe, invariably denote the preſence of inflammation in the ſyſtem. By the term *pyrexia*, then, is to be underſtood what is vulgarly called fever, conſiſting principally in irritated action of the heart and arteries, with increaſed evolution of heat, without any alluſion to the part or organ from which it takes its riſe. Technically it is called *ſymptomatic* fever, and is in reality as truly ſecondary or ſymptomatic in proper fever, as it is in other inflammations.

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* "Febris dignoſcitur pulſu citato."—*Linn.* vide *Synop. Noſ. Method. ab ill Cullen.*, tom. 2, p. 86.

† "*Febris.* Innati caloris augmentum præternaturale, cum oris ſiccitate et *gravitate corporis.*" Ibid. p. 147.

The character of fever drawn by Sauvages, in his great work on Noſology, though imperfect, approaches the neareſt perhaps to a juſt definition of any that has been given. His words are—"In febre, vires cordis et arteriarum multum increſcunt; aſt illico vires ſtomachi, *vires artuum*, vires *imaginationis*, attentionis ad negotia moralia minuuntur; venus ſilet"—"*cætera ſenſuum organa* fluido nerveo defraudantur*." In this deſcription, the diſturbance in the ſenſorial functions of ſenſation, voluntary motion, and intellect is diſtinctly marked; though it is not true that the organs of ſenſe are in general deprived of their energy in fever, for they are more frequently deranged in the oppoſite way. Nor is it always the caſe, that the activity of the heart and arteries is increaſed, ſince it has been ſhewn that the reverſe of this often happens.

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* *Noſologia*, tom. 1, ſect. 344.

One very important and eſſential circumſtance in the character of fever has been omitted in the above as well as moſt other definitions that have been given—namely, pain in the head. It is ſurprizing that this ſymptom ſhould not have entered into the definition of fever by noſologiſts. It is true they have employed it to characterize particular ſpecies of the diſeaſe; but it belongs equally to the whole claſs, as much as pain in the cheſt does to pulmonic inflammation. The pain in the head in fever is not always, indeed, acute, and is apt to be obſcured by the ſtupor and inſenſibility under which the patient often labours: but as long as conſciouſneſs remains, ſome degree of uneaſy feeling in the head is never abſent; and it is in general the chief diſtreſs of which the patient makes complaint. Le Roy held this ſymptom to be of ſuch importance, that, when the pulſe did not indicate the preſence of fever, he turned his attention to the headach, which, he ſays, when not very manifeſt, may be detected by cauſing the patient to move about, or by moving the head itſelf.

The more violent the fever, and the more malignant its character, the greater is the derangement of the ſenſorial functions—they are always in a direct ratio one to the other. In the leaſt dangerous form of fever, the *ſynocha* of Cullen, or mild inflammatory ſpecies, the heat is great and the pain of the head ſevere, owing probably to the ſenſibility of the patient being excited beyond the degree of health; but the ſenſes, underſtanding, and voluntary power, are but ſlightly deranged—"ſenſorii functiones *parùm* turbatæ[*]." But in typhus, in which the eſſential characters of fever are more ſtrongly marked, although the pulſe and ſkin are often but little changed from the ſtate of health, the functions of the brain are conſiderably more diſordered—"ſenſorii functiones *plurimùm* turbatæ[†]." While the plague, the moſt violent and malignant of fevers, is characterized by extreme depreſſion, and, in ſome caſes, an almoſt total abolition, of all the ſenſorial powers. "A ſudden loſs of ſtrength," Dr. Ruſſel obſerves, "and diſturbance of the functions attributed to the brain *and heart*, are reckoned in a particular manner ſymptoms belonging to the plague. In their higheſt degree, they diſtinguiſh the moſt fatal forms of the diſeaſe, and, under different modifications, adhere to all its varieties*." Again, he obſerves, that among the chief ſymptoms of the attack of plague are, "pain in the back and loins; an intenſe headach; uncommon giddineſs; and a ſudden loſs of ſtrength. To theſe ſucceed a violent fever; the eyes, ſoon loſing their natural luſtre, acquire a kind of muddineſs; and the countenance of the ſick is ghaſtly and confuſed beyond deſcription." In ſhort, the marks of diſordered brain in the worſt forms of fever are too manifeſt to eſcape detection: it is only in the milder kinds of the diſeaſe that ſuch a ſtate admits of queſtion; and even here, I think, it has been ſhewn, that diſturbance of the ſenſorial functions is invariably preſent, and furniſhes the only ground of diſcrimination between fever ſtrictly ſo called and other diſeaſes. The affection of the heart in the plague, alluded to by Dr. Ruſſel, is not a conſtant ſymptom, as appears from the hiſtory of fever above delivered*.

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[*] Culleni *Genera Morborum*. G. 4. *Synocha*.

[†] Ibid. G. 5. *Typhus*.

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* *Treatiſe on the Plague*, 4to, p. 88.

In conformity, then, with the view of fever above given, we ſhould conſider it as a topical affection of the brain, founded in inflammation; in a word, as a variety of *phrenitis*, the eſſential characters of which it contains. The term *phrenitis*, however, is objectionable, as expreſſive of delirium or alienation of mind, which, though a very frequent, is not a neceſſary nor conſtant attendant on fever. The term *encephalitis*, as implying merely inflammation of the contents of the cranium, ſeems more appropriate, and is ſufficiently comprehenſive to embrace every variety of the diſeaſe.

Muſt not fever, therefore, in future be removed from the claſs of *univerſal* diſeaſes (if there be any ſuch), and ranked with the PHLEGMASIÆ, or topical inflammations, of noſologiſts? Like theſe, its characters are to be ſought in the condition and feelings of the part affected, and in the ſtate of its peculiar functions. Thus, in every proper fever, we ſhall find, in addition to the ordinary febrile ſymptoms of hot ſkin, irritated circulation, foulneſs of tongue, thirſt, and deficient or irregular ſecretions,—pain in the head, generally of the throbbing kind, and extending along the continuation of the brain that is lodged in the channel of the ſpine; increaſed heat of the head, eaſily perceived on compreſſing it with the hands, even though the body and extremities be cold; unuſual throbbing of the arteries in the neck and temples, ſuffuſion of the eyes, and an altered expreſſion of features eaſily to be perceived, but difficult to be deſcribed; together with diſturbance of all the functions immediately belonging to the brain, as the *voluntary* and *mental* powers (both of which are always greatly weakened), and *ſenſation*, which, at different times and in different ſtages of the diſeaſe, is ſubject to be exalted, depreſſed, or otherwiſe depraved. If to theſe be added, irregularity in regard to ſleep and watching, which, though common to many other diſeaſes, belongs in a peculiar manner to the ſtate of fever, we ſhall have characters always ſufficient to enable us to detect the preſence of fever in the ſyſtem, and affording at the ſame time the cleareſt indications of its nature and ſeat.

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* *Vide* page 66.

## CHAP. V.

## OF THE CURE OF FEVER GENERALLY, IN RELATION TO THE FOREGOING DOCTRINE.

I AM at preſent to ſpeak of the cure of fever in a general way only, and chiefly as theoretically deducible from the pathology of the diſeaſe above laid down. The treatment of the particular varieties will be more fully ſpoken of hereafter.

When it is conſidered that the treatment of this diſeaſe has engaged the attention of the moſt enlightened phyſicians of all ages, and that the beſt eſtabliſhed practice has been rather the reſult of reiterated obſervation and experience, than the offspring of any ſpeculations reſpecting its nature and origin, it is hardly to be expected that any theory, however juſt in its principles, will, at once, materially improve the cure of fever, or detract much from its danger and fatality. Nor is it to be expected that at this time of day any new remedies can be ſuggeſted; for the whole materia medica has been often ranſacked for the purpoſe. Yet it cannot be queſtioned that great advantages in regard to practice muſt always accrue from the eſtabliſhment of a juſt theory reſpecting the nature and origin of diſeaſes. It ſerves to guard us againſt the employment of ſuperfluous and frequently hurtful remedies; and if it hold out no new nor more ſucceſsful means of cure, it at leaſt teaches us a more preciſe and advantageous uſe of thoſe already in our hands: while the want of it leaves us in doubt and uncertainty reſpecting the real powers and effects of remedies, and leads us often to the empirical and indiſcriminate employment of thoſe of various and oppoſing tendencies.

This may be exemplified in inflammation of the inteſtinal canal, as produced by ſtrangulated hernia, in compariſon with fever. In the former caſe, the nature of the diſeaſe is obvious, and the indications of cure at once preſent themſelves. The patient is not teazed by the exhibition of numerous and frivolous remedies; the object aimed at is clear and preciſe; the means of attaining it are ſimple, and their mode of acting well underſtood. But in fever, the reverſe of all this is the fact. We neither know the nature of the affection, nor even its ſeat:

and the uncertainty we are in with regard to the effects of our applications, obliges us, in our anxiety to do ſomething, to make the patient undergo the routine of medical practice: he is in turn vomited, purged, ſweated, and ſtimulated in a thouſand different ways, under the idea of *ſtrengthening;* and, laſtly, bliſtered from head to foot, without any preciſe object in view; one means being reſorted to after another, for little other reaſon, it would ſeem, than becauſe the former had failed. The patient, to be ſure, in a number of inſtances, recovers; but he probably owes his recovery leſs to art, than to the powers of reſiſtance of the conſtitution, the *vis conſervatrix naturæ*, which is often not only an overmatch for the diſeaſe, but for the doctor alſo.

If there be any foundation for the doctrine of fever here brought forward, much of theſe evils undoubtedly will be prevented. The diſeaſe may ſtill prove difficult of cure, and, notwithſtanding our beſt endeavours, terminate on many occaſions fatally: but the ſeat and nature of the diſeaſe being known, the indications of cure will be obvious, and the means of fulfilling them ſimple, if not effectual: the object of the practitioner will be clear, and his efforts at leaſt well directed.

It is a peculiar feature of the preſent doctrine, that it is not, as far as I am able to judge, at all at variance with any eſtabliſhed mode of cure, the utility of which experience has fully ſanctioned. The hypotheſes that have from time to time prevailed with regard to the nature of fever have, without exception, when applied to practice, been found defective. They have either furniſhed indications which have been inadequate to the purpoſes of cure, or have ſuggeſted the employment of means which experience has ſhewn to be prejudicial. Of this it were eaſy to adduce abundant proofs. Whether we look to antient or to modern times, we ſhall find reaſon to be convinced, that medical hypotheſes have not a little tended to vitiate medical practice.

Thoſe who believed in the exiſtence of *lentor* and *obſtruction* as the cauſe of fevers, naturally inclined to the copious uſe of diluents, and of medicines ſuppoſed to be of a reſolvent nature, as neutral and volatile ſalts, and ſaponaceous compounds. Thoſe who ſuppoſed the exiſtence of a predominant acidity in fevers; or, on the other hand, an alkaleſcent ſtate of the fluids; inſiſted, of courſe, upon the uſe of remedies of an oppoſite deſcription. Thoſe, again, who looked upon morbid exceſs of heat as the eſſential part of fever, ſhould, to be conſiſtent, have confined their attention chiefly to the means calculated to reduce this: yet it is certain that fevers are, on many occaſions, beſt and moſt ſpeedily cured by heating and ſtimulating remedies; being, by theſe, ſooner brought to a critical termination:—"licere febres parvas augere," ſays Celſus,—"fortaſſe enim curatiores fient; et cum magis corpus incaluit, ſequatur etiam remiſſio."

Upon the idea of SPASM of the extreme veſſels being the moſt eſſential link in the chain of febrile phenomena, *antiſpaſmodics* in general, and *nauſeating doſes* of antimonials in particular, have been liberally and aſſiduouſly adminiſtered. While thoſe, again, who ſaw nothing but DEBILITY in the character of fever, have been led to the uſe of opium, ſtrong drinks, and ſtimulating and tonic remedies, as calculated to rouſe the ſuppoſed dormant energies of the ſyſtem.

All theſe various modes of cure, with many others that might be enumerated, have been employed in the treatment of fever, and too often carried to a pernicious length. Patients, in innumerable inſtances, have been ſweated or purged to death by the pertinacious uſe of *emetic tartar*, *James's Powder*, and the like;—or ſtimulated into phrenzy and apoplexy by the exceſſive uſe of opium;—or have had the powers of the ſyſtem ſtrained, and ultimately exhauſted, by the immoderate employment of wine, ſpices, camphor, and other heating remedies. There is reaſon to believe, indeed, that the practice of the moſt obſervant and experienced, whether favourers of the theory of *ſpaſm*, *debility*, or any other imaginary proximate cauſe, has been biaſſed in ſome degree by an attachment to particular doctrines.

The treatment of fevers in general uſe at preſent, at leaſt in this part of the world, is palliative rather than radical, and is, in principle, nearly the ſame with that which has been handed down to us from the days of Hippocrates. The inſtruments of medicine indeed, by the extenſion of the materia medica in later ages, and the improvements that have taken place in chemiſtry, have undergone a material change; but the general ſcope and tendency of the remedies that have been employed are in a great degree the ſame. In the more violent forms of fever, bloodletting, ſweating, purging, abſtinence, cool drinks, and cool air, conſtitute the eſſential part of the treatment that has been had recourſe to, both in antient and modern times; while the milder forms of the diſeaſe have been left in a great meaſure to follow their natural courſe, and have generally ſubſided under the uſe of moſtly inactive remedies; ſuch, indeed, as have little claim in any caſe to the merit of having performed a cure.

But if the opinion I have been endeavouring to eſtabliſh be well founded;—if fever, as I ſuppoſe, conſiſt eſſentially in topical inflammation of the brain; it becomes a queſtion of great moment to determine, what influence ſuch a doctrine may have on practice. Ought we to be content, as hitherto, with ſuffering the diſeaſe to wear itſelf out, after haraſſing the patient for two, three, or more weeks; at the riſk, all the while, of exhauſting his ſtrength by the immoderate exertions of the ſyſtem, and of ruining at the ſame time the ſtructure of the moſt important organ of the machine, and, along with it, the energy of both body and mind—to ſay nothing of the deſtruction of other organs, which ſo frequently happens during the courſe of fever? or ought we, from the analogy of other inflammations, to interpoſe our efforts, and, by the uſe of prompt and active means, endeavour to cut ſhort the progreſs of the diſeaſe, and thus, in many inſtances, anticipate or prevent the moſt ſerious future miſchiefs? This is a queſtion, when we conſider the almoſt endleſs varieties of fever that occur, of the moſt difficult nature, and one which I can not hope to anſwer completely or ſatisfactorily. No general rule probably can be laid down that will apply to all caſes. What may be ſafe, and eaſy to accompliſh, on one occaſion, may be hazardous and difficult on another, and quite impracticable in a third; according to time, degree, and various other circumſtances. It is a problem which future experience alone can ſolve.

Admitting the doctrine, that fever is inflammation, the ſeat of which is in the brain, the principal remedies that ſuggeſt themſelves, from the analogy of other inflammations, are the following: evacuations of various kinds, as bloodletting, purging, ſweating, &c.; the application of cold; and irritation of neighbouring or diſtant parts, as by bliſters, ſinapiſms, &c. Theſe are the means applicable to ordinary inflammation. Let us ſee how far they apply in the cure of fever.

## Sect. I.---*Of Bloodletting, as a Remedy for Fever.*

ACCORDING to the idea commonly attached to inflammation of the brain, the moſt powerful evacuations, particularly of blood, would ſeem to be indicated; and the more ſo, from the large proportion of blood that is naturally diſtributed to this organ. If fever be nothing more than inflammation in the brain, why, it may be aſked, is it not in all, or almoſt all, caſes ſpeedily and certainly cured by veneſection? The anſwer to this will be given preſently.

If, under the title of inflammation of the brain, we are to conſider only the moſt violent and acute form of the diſeaſe,—that to which authors have eſpecially given the denomination of phrenitis,—undoubtedly it differs in many points, both in its ſymptoms and mode of cure, from ordinary fever. No one doubts of the propriety and neceſſity of having recourſe in this caſe to profuſe evacuations of every kind, and eſpecially bloodletting; to the moſt rigid abſtinence; and to all the other means calculated to ſubdue active inflammation. But it by no means follows, that becauſe this practice is not generally applicable in the treatment of fever, the diſeaſe muſt be of a different kind, and the doctrine that "fever is inflammation" conſequently ill founded. If it be admitted that the brain like other organs is ſuſceptible of different degrees of inflammation; that the inflammation may be more or leſs diffuſed or circumſcribed; in other words, that it may partake of the nature of eryſipelas or of phlegmon; that it may be with or without general affection of the vaſcular ſyſtem; that it may take place in different habits of body, and in combination with other affections,—circumſtances all of which are found to modify greatly the treatment of inflammation wherever ſeated; ſurely it ought not to be expected that bloodletting ſhould be univerſally admiſſible in the cure of inflammation in the brain: nor does its frequent inutility in fevers conſtitute an objection of any weight to the doctrine here endeavoured to be maintained.

Bloodletting ſeems in general to have been conſidered too much in the light of a direct remedy for inflammation; as if, by emptying the veſſels and leſſening diſtenſion, it acted on and removed the immediate cauſe of the diſeaſe. This is far from a proper view of the ſubject. The loſs of half a pound of blood, a quantity often ſufficient for the cure of inflammation, can have no calculable effect in diminiſhing the tenſion of the vaſcular ſyſtem, mechanically ſpeaking. The veſſels throughout the body are liable to far greater viciſſitudes of diſtenſion and contraction upon every partial change in the diſtribution of the fluids. It is in ſome other way, therefore, and not ſimply by unloading the veſſels, that bloodletting produces its good effects in the cure of inflammation. Nor is it by weakening the ſyſtem generally; for there are many inflammations that are beſt treated by means the reverſe of this; by remedies that give vigour to the ſyſtem, and increaſe its activity.

Inflammation occurs as readily, generally ſpeaking, in weak as in ſtrong habits: there appears even reaſon to believe that the former are in ſome reſpects more diſpoſed to it than the robuſt and vigourous. It ſeems to be a general law of the animal œconomy, that in proportion as the powers of the body are diminiſhed, the excitability with regard to impreſſions, and conſequently the diſpoſition to be thrown into irregular action, are increaſed. Hence weakneſs, though never of itſelf a diſeaſe, may prediſpoſe to it. But the diſeaſes which ariſe under ſuch circumſtances are characterized by leſs activity, and go on more ſlowly to diſorganization; and they commonly alſo require a leſs active mode of cure.

When inflammation ariſes in debilitated habits, it is often not only not curable by general bloodletting and other evacuations, if employed to any conſiderable extent, but may be even rendered thereby more difficult of removal; and that, probably, for the reaſon above ſtated, namely, that weakening the ſyſtem increaſes the diſpoſition to irregular action, or prediſpoſes to diſeaſe. The rule, however, is by no means conſtant, that bloodletting is improper as a remedy for inflammation in debilitated habits. On many of theſe occaſions, it is found to be ſcarcely leſs effectual than in a ſtate of vigour. To determine in different caſes when it may be proper or otherwiſe, is a very difficult taſk, and requires much judgment and experience on the part of the practitioner. From my own obſervation, I am inclined to believe, that, when properly adjuſted to the actual ſtrength of the ſyſtem (a point of the firſt magnitude, but which has been too much overlooked*), there are few caſes of inflammation that are not capable of being relieved by it, and that it may form a valuable auxiliary to other means, even to thoſe of a tonic and ſtimulant nature.

This, I know, is in oppoſition to received opinions, and will be ſuppoſed to involve an inconſiſtency, namely, the recommending at once bloodletting and the uſe of tonic and ſtimulant remedies. The inconſiſtency, however, in this caſe is more apparent than real. If diſeaſe do not conſiſt eſſentially in weakneſs ſimply (as has, I think, been clearly ſhewn), but in ſome unknown deviation from the natural and healthy mode of acting; then it is clear that it may be obviated, and health reſtored, by remedies of either the ſtimulating or debilitating claſſes, which have no right therefore to be ſet in oppoſition to one another on this occaſion. In fact, whatever is capable of producing any conſiderable impreſſion on the ſyſtem, or of changing its mode of acting, may become a remedy for its diſorders: and hence means apparently the moſt oppoſite are often found to remove one and the ſame diſeaſe. Diſeaſes accompanied with great debility have often been cured by loſs of blood and other evacuations, while thoſe of an oppoſite character have in many inſtances yielded to the moſt active ſtimulants. A ſlight acquaintance with the hiſtory of phyſic will ſerve to convince us of this. The practice of Sydenham was in many reſpects in direct oppoſition to that of Morton; the one employed bleeding, where the other gave the moſt active ſtimulants: yet there can be no doubt that they both frequently ſucceeded in curing their patients.

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* I believe that blood is often drawn in too large quantities from the ſick, without ſufficient attention being paid to their ſtate of weakneſs at the time. When bloodletting is thought adviſable, in adults, the quantity of blood taken away is generally between ſix and twelve ounces. But I have obſerved a manifeſt reduction of the ſtrength, and a feeling of weakneſs, continuing for ſeveral days, induced by the loſs of not more than from two to three ounces, and yet with evident relief to the diſeaſe. In ſuch a caſe, it is probable that the loſs of ſix or eight ounces, which is in general not conſidered as a large quantity, would do harm. The remedy itſelf is not always ſo much to be blamed, as the error in its adminiſtration.

Of late a diviſion of inflammation has been made into two ſpecies, the *active* and the *paſſive*: the latter being ſuppoſed to conſiſt in a weakened action of the inflamed part. If this be meant in relation merely to the more active form of the diſeaſe, it may be well founded; but if in reſpect to

Vide page 321 – [illegible]
[illegible]

the ſtate of health, I believe it to be far otherwiſe. There is no inflammation in which there are not unequivocal marks of increaſed exertion in the part itſelf, however different the general ſtate of the ſyſtem. The phenomena are the ſame eſſentially, both in the active and the indolent forms of the diſeaſe, and differ only in degree. But a difference in degree merely has never been allowed to conſtitute a diverſity of ſpecies.

Let us take the ſcrophulous ophthalmia as an example. This has been called a caſe of *paſſive* inflammation depending on debility ; not of the conſtitution only, but of the inflamed part itſelf. The phenomena are, however, quite irreconcileable with this idea. The vaſcular action and the ſenſibility of the part are evidently increaſed. Hence the tumour, the enlargement of veſſels and conſequent redneſs of the membranes. That theſe effects are not owing to ſtagnation of the fluids, and want of power in the veſſels to tranſmit their contents, is ſhewn by the preſence of all the marks of increaſed circulation, as a florid hue, augmented ſecretions, heightened ſenſibility rendering the impreſſion of light painful, and increaſed evolution of heat ; and ſtill more by the growth of new parts, as fungous excreſcences *occaſionally*, and new veſſels *conſtantly*, obſerved. The veins too coming out of the part are found to be enlarged, as well as the arteries; which is a deciſive proof that the blood is more freely tranſmitted through the organ. In the moſt acute ophthalmia, the ſame appearances are obſerved, but only in an aggravated degree.

Again; in the indolent enlargement of glands, as in ſcrophula (which has been called a diſeaſe of debility, though upon no foundation that I can perceive), the ſame increaſe of action above the ſtandard of health is evident;—in the greater vaſcularity of the gland itſelf; in the enlargement of the veins coming out of it; in the increaſed ſenſibility of the part above what is natural; and in the growth of new ſolid matter (for the enlargement is clearly not attributable ſolely to effuſion or to diſtenſion of veſſels). To this may be added, the tendency to ſuppuration, which exiſts more or leſs in all theſe caſes, as well as in pure phlegmon.

The miſtake, for ſuch I conceive it to be, of conſidering the leſs active kinds of inflammation as depending on debility of the part itſelf, ſeems to have ariſen from obſerving the ſucceſs that is found to attend the uſe of tonic and ſtimulant remedies in ſuch caſes. The fact is not to be controverted; but the inference from it is liable to objection. In medicine, the ſame end is often attained by very different means. If it be true, as above alleged, that a ſtate of general debility prediſpoſes to irregular actions, or topical diſeaſe, it ſhould follow that exciting the general action of the ſyſtem may be a probable means of taking off topical diſeaſes. And this appears to be actually the caſe; as is daily exemplified in the cure of catarrh, ſore throat, and a number of other ſlight inflammations, by an occaſional debauch, or the uſe of ſtimulating and heating remedies.

Topical inflammations are thus not only often relieved by increaſing the actions of the ſyſtem generally, but by ſtimulating applications to the part itſelf. Theſe, by exciting the actions of the part ſtill further, and perhaps alſo by diminiſhing at the ſame time its excitability with regard to the ordinary and healthful ſtimuli, ſeem, as it were, to induce fatigue in it; and, when the application is withdrawn, the action falls below that which is eſſential to inflammation, and approaches that of health. This is well illuſtrated in the caſe of inflammation produced by burns and ſcalds, which, in many caſes, appears to be as ſucceſsfully treated by ſtimulants of the moſt active kind, and even by heat itſelf, as by the application of cooling remedies, or of actual cold.

From what has been ſaid above, it may be concluded, that bloodletting is not a *direct* and *abſolute* remedy for inflammation, but is only uſeful under certain circumſtances; while in others it may be diſadvantageous. Its want of ſucceſs, therefore, as a general remedy for fever, is no argument that the latter is not founded in inflammation. Neverthel eſs, it will be found on examination, that bloodletting has been as often uſed with advantage in the treatment of fever, as in moſt other inflammations.

There is to be obſerved, in the practice of all ages, a ſtrong propenſity to employ bloodletting in the cure of fevers. This, it is probable, aroſe at firſt from obſerving the frequent cure of the diſeaſe by ſpontaneous hæmorrhagy, particularly from the veſſels of the noſe. This termination of fever was noticed by Hippocrates, and has been remarked by all ſucceeding writers.

The propriety of bloodletting in fever might alſo have been deduced from the ſtriking analogy which could not but have been obſerved to exiſt between fever and inflammation, and which, as before remarked, is ſo great as to have prevented their ever having been accurately diſcriminated in medical writings. The moſt obvious characters were ſeen to be the ſame in both; the ſame heat of ſkin, thirſt, and quickneſs of pulſe; the ſame tendency in both to run through certain ſtages, and to terminate by critical evacuations; while they were obſerved to be uſhered in by a ſimilar train of ſymptoms.

It was perfectly natural, therefore, that bloodletting, which was found to be ſo ſovereign in the cure of moſt inflammations, ſhould ſuggeſt itſelf as a fit remedy for fever; and its continuing to be ſo much employed, is a proof that it muſt, upon the whole, have been found advantageous. That it has gone ſo much into diſuſe in modern times, is perhaps more to be aſcribed to the influence of hypotheſis and ſpeculation, than to any direct experience of its ill effects. We need but to reflect on the *Stahlian* doctrine of diſeaſes, the *ſpaſmodic theory* of Hoffman and Cullen, and the more recent hypotheſis of Brown, with the extenſive influence they have in turn had on general practice, and we ſhall ſee abundant cauſe for the diſrepute into which bloodletting has fallen of late, without at all recurring to experience to prove its inutility.

In the earlier ages of medicine, bloodletting was very generally employed in the treatment of fevers; not merely in thoſe of the inflammatory kind, but equally perhaps in the malignant and peſtilential. *Ætius* and *Galen* particularly recommend it in peſtilential diſeaſes, where carbuncles made their appearance; and, in general, in all ſuch as were ſuppoſed to proceed from a putrid contamination of the fluids[*]. *Celſus* calls it "*optimum remedium*" in peſtilential fevers, but ſubjoins—"ſi vires ſinunt, præcipueque cum ardore febris eſt." In the cure of the *ſemitertian*, he adviſes bloodletting as the firſt remedy, provided no ſtrong contraindication exiſts—"niſi magnoperè aliqua res prohibit, inter initia ſanguis mitti debet."

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[*] *Galen* Meth. Med., lib. 12, cap. 15—*Celſus* De Medicine, lib. 3, cap. 7—ibid. cap. 8—"Et ſane dum peſtilentia vehemens Aſiam deprehendiſſet, multoſque perdidiſſet, meque etiam morbus attigiſſet, ſecundo morbi die, remiſſione febris facta, crus ſcarificavi, duaſque fere ſanguinis libras detraxi, hacque de cauſa periculum vitavi. Plerique etiam alii, hoc præſidio uſi, ſuperſtites evaſere; erant enim plenitudinis ſigna: illique præcipue ſervabantur, qui ſanguinem copioſè exhauriebant." *Oribaſius* De crurum ſcarificatione, cap. 28.—*Alex. Trallian.* De arte Med., lib. 12, cap. 2.—*Ballonius* Epidem., lib. 1.—*Septalius* Labyrinth. Med. Extricat.—Hoffman. Op., 4to, tom. 6, p. 240.—*Baldinger* De Feb. Acut. Therap., p. 81.—*Quarin* Meth. Med. Feb., p. 43.

*Oribaſius*, a writer of the fourth century, in his book *De crurum Scarificatione*, ſays he was himſelf attacked by a fever of the peſtilential remittent kind, which had raged with much violence in Aſia, and deſtroyed great numbers; he was cured by the loſs of two pounds of blood taken from the leg: he adds, that in many others the diſeaſe was prevented by the ſame remedy, and that thoſe who were bled freely in general recovered. *Alexander* of *Tralles* likewiſe employed this remedy in fever; as did the Arabian phyſicians in general. *Ballonius* and *Septalius* alſo recommend it. *Proſper Alpinus* ſays, the Ægyptians let blood in all putrid diſeaſes.

*Hoffman*, though generally averſe to bleeding in fevers of the peſtilential or petechial kind, admits it may be requiſite when putridity in fevers ariſes from, or is accompanied with, plethora. *Tiſſot* approves of it when inflammation ariſes in the courſe of putrid fever; as does *Baldinger*, *Quarin* alſo admits its uſe under ſimilar circumſtances. *Haſenohrl* conſiders it as neceſſary in petechial fevers. In theſe fevers, he ſays, the blood often ſhews the buffy coat on its ſurface, though in ſome it is fluid and diſſolved from the beginning. De Haen alſo remarks that the inflammatory cruſt on the blood in petechial fever became firmer after bleeding. Dr. Mead obſerves that the treatment of fever in general is to be begun by bloodletting, even although the pulſe might not ſeem to indicate it.

Willis reckons bloodletting among the neceſſary remedies of fever in general, but inſiſts at the ſame time upon its early adminiſtration; and ſays that, without attention to this, both bleeding and other evacuations are not only of little uſe, but may even do harm—" vomitus autem, purgatio, et veneſectio, niſi ab initio ſtatim celebrantur, parum opis præſtant, imo ſæpius obeſſe ſolent*." He employed this remedy in various ſpecies of fever, both intermittent and continued, with marked ſucceſs. In the tertian form of fever, he bled the patient during the intermiſſion, and then purged him: and ſome hours before the next fit was expected, he applied epithems to the wriſts, and bled him again to the amount of ſix ounces; from which time, he obſerves, the fit did not return. In the ephemera, and in the *ſynochus non putrida* or ſimple inflammatory fever, he adviſes bloodletting, abſtinence, and cooling drinks, *leſt the diſeaſe ſhould degenerate into the putrid kind**. —This ſhews him to have been aware, that putridity was no eſſential part of the character of fever, but the reſult of violent action in the ſyſtem. In this form of fever, the *ſynochus putrida*, the importance of bloodletting is more ſtrongly inſiſted upon, but limited to the firſt ſtage of the diſeaſe, which, he ſays, may continue from one or two, to ſix or ſeven days, according to the age and habit of the patient. By this practice, the further increaſe of the diſeaſe was prevented, and the fever, as it were, cruſhed in the egg—" majora morbi incrementa præcaveri, febremque velut in ovo necari." *cap.* 9. Even in the ſecond ſtage, the uſe of bloodletting is inculcated, if the vaſcular action is ſtrong and violent, and if conſtant watching, delirium, or intenſe pain in the head, are at the ſame time complained of.

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* De febribus, cap. 4.

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* De febribus, cap. 8.

Baglivi obſerves, that experience taught him to begin the cure of all fevers by bleeding; and that he had very frequently remarked that a ſweat followed, with relief to the patient*. He obſerves further, with regard to ſome malignant fevers which occurred in the Hoſpital at Rome, that, when blood was taken from the arm, the patient grew worſe, and the diſeaſe flew to the brain, producing delirium, ſtupor, &c.; but that when the veins of the foot were opened, he was relieved by the operation.

Huxham, an authority of great weight in every thing that regards practice, is particular in remarking, that the apparent contraindication to bloodletting, ariſing from the weakneſs and depreſſion obſervable in malignant and peſtilential fevers, is not to be attended to. "Theſe fevers," he obſerves, "at their onſet, greatly ſink the ſpirits, and cauſe ſurpriſing and ſudden weakneſs, eſpecially when from contagion; yet bleeding to ſome degree is moſt commonly requiſite (nay neceſſary) in the ſtrong and plethoric, &c."—"this therefore, when neceſſary, ſhould be done as early as poſſible"—"a quick, tenſe pulſe, ſharp heat, great difficulty of breathing, and violent pain in the head and back, evidently demand it*." He remarks that fevers which, during their courſe, aſſume an appearance of the greateſt malignity, are often in the beginning attended with marks of the moſt active inflammation. "I have very frequently," he obſerves, "met with a buffy or ſizy appearance of the blood in the beginning of malignant fevers; and yet blood drawn two or three days after from the very ſame perſons hath been quite looſe, diſſolved, and ſanious, as it were†." And he quotes the practice of the French ſurgeons among the priſoners at Plymouth, who bled their patients every day, as a matter of courſe, in thoſe fevers: when it was obſerved that a buff on the blood in the firſt days of the diſeaſe was very common, but afterwards diſappeared.

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* Praxis Medica, lib. 6, cap. 13.

Van Swieten was well acquainted with the power of bloodletting to cut ſhort fever at its commencement, as well as other inflammations; a practice that he quotes from Galen, who carried it ſo far as to induce fainting‡.

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* Eſſ. on Fevers, 8vo, p. 105.

† Ibid. p. 288.

‡ Van Swieten in Aph. 54. "Docet hoc evidenter veneſectio, quæ furentem in morbis acutis nimio impetu

Sir John Pringle, in the *hoſpital* fever, in the year 1757, firſt blooded his patient, then purged him, and afterwards gave twice a day a grain of emetic tartar to thoſe that were not in the low ſtate of fever, but complained much of headach, coſtiveneſs, and diſorder at the ſtomach. All who were treated in this manner, he ſays, recovered. His teſtimony in favour of bloodletting in the *camp remitting fever* is likewiſe very ſtrong. The remiſſions, he obſerves, uſually appear from the beginning, eſpecially if the patient is blooded in the firſt attack. He was accuſtomed to bleed his patients in the exacerbations of the fever, contrary to the old doctrine.

"Copious, or what is deemed by moſt perſons to be profuſe bleeding," ſays Dr. Jackſon, "often arreſts the progreſs of continued fever at one ſtroke: it rarely fails of entirely changing its condition if the circumſtances be proper in themſelves, and if the proceſs be judiciouſly conducted in practice." "Time and circumſtance are here every thing. Bleeding, which is deci-

vitam ſic poteſt compeſcere, ut incipiant omnia remittere, languere; imo ad animi deliquium deducta hac evacuatione in acutis continuis, ubi validæ ægrotantis vires ſunt, ſæpè illico tollitur febris; ut Galeno, ſic febrem curanti, adſtantium quis dixerit: 'O homo! jugulaſti febrem!'"

ſive of cure as employed in the early ſtages of ſeveral fevers, is only temporizing in the latter periods of any*."

In the fever which, at different periods, but eſpecially of late years, has committed ſuch devaſtation in America and the Weſt Indies, the evidence in favour of bloodletting is of the ſtrongeſt kind. While the yellow fever prevailed at Baltimore in 1794, bloodletting was had recourſe to by Dr. Dryſdale with the moſt decided advantage. The effects obtained from it appear highly illuſtrative both of the ſeat and nature of the diſeaſe. Dr. D. remarks of the pulſe in this fever, that when it was very frequent, veneſection rendered it more ſlow; when very ſlow, it gave it frequency; and when depreſſed and ſmall, it gave it fulneſs†.—The ſame, it may be proper to add, was remarked by Sir John Pringle, in the *remittent fever*; and in dyſentery combined with fever, by Dr. Donald Monro‡.

Veneſection, Dr. Dryſdale obſerves, removed the delirium and comatoſe ſtate; and, on the other hand, where there was great watchfulneſs, it acted like an anodyne. It diſpoſed to a lax ſtate of the bowels; it checked vomiting and hiccup; it induced perſpiration; and, by removing a ſenſe of oppreſſion, gave apparent ſtrength and vigour. It was obſerved to make the dilated pupil contract, and abated the univerſal pains.—It is ſcarcely poſſible, perhaps, to afford a more ſtriking exemplification of the truth of the Hippocratic maxim, "that the nature of a diſeaſe is known by its remedies," than is here given. The ſymptoms mentioned can only be referred to the diſordered ſtate of the brain, while their ſpeedy relief by bloodletting renders it highly probable that they were founded in inflammatory action.

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* *Syſt. of Med. Arrang. for Armies*, by Robert Jackſon, M.D. p. 209.

† See Philadelphia Medical Muſæum, by Dr. Coxe, vol. i, No. 3.

‡ Diſ. of the Army, p. 181, 185.

Theſe are a few only of the authorities that might be cited in favour of bloodletting, as a general remedy for fever. Others of no leſs weight will be adduced hereafter, with regard to its effects in particular ſpecies of the diſeaſe.

It is not, however, to be ſuppoſed that phyſicians are unanimous, or ever have been ſo, in commendation of this practice. In all ages, bloodletting has met with opponents, and at preſent, in this country at leaſt, is almoſt entirely gone into diſuſe in the treatment of fever. The ſymptoms of increaſed vaſcular action ſo common at the beginning of fevers, and which formerly afforded an irreſiſtible motive for the uſe of the lancet, are now of no weight with us. We are taught to diſregard the violence of arterial action, as a ſtate neceſſarily of ſhort duration, and which muſt inevitably terminate in ſucceeding collapſe or debility, the condition, it ſeems, that we are alone to dread. But it ſhould be kept in mind, that the latter is dependent on the former, as an effect on its cauſe; that if the violent excitement, which takes place almoſt univerſally in the beginning of malignant fevers, can be checked or prevented by any means, the ſymptoms of malignity, as it is termed, the petechiæ, vibices, hæmorrhages, and gangrene of internal organs, rarely appear. It is during the active ſtate of the diſeaſe, while the vaſcular action is in exceſs, that the foundation is laid for ſuch conſequences.

The objections that have been made to bloodletting in fever appear to have their foundation in theory, rather than obſervation; and were it otherwiſe, negative teſtimony cannot juſtly be oppoſed to poſitive facts. Were the practice of bloodletting really found in many caſes to be ineffectual, and on ſome occaſions injurious, as is no doubt the caſe, it would only lead to a ſuſpicion that the circumſtances under which it was applied were different, and that ſufficient diſcrimination had not been made between the various cauſes that may render the practice ſalutary or otherwiſe.

An oppoſition to the practice, from its diſagreeing with any preconceived opinions as to the nature or proximate cauſe of the diſeaſe, merits little conſideration. It has been clearly ſhewn, I think, that the debility and proſtration of ſtrength, together with the ſigns of malignity which often manifeſt themſelves during the progreſs of fever, are conſequences merely, not eſſential parts of the diſeaſe; and may often be prevented by whatever is capable of checking the violence of the fever at its commencement, whether bloodletting, or any other means.

The objections made to bloodletting have been often of the moſt abſurd kind. Van Helmont and his followers rejected it altogether, no doubt becauſe they could not reconcile it to their chemical notions of diſeaſe. This objection is juſt as well founded as that of Chryſippus, Strato, and ſome others mentioned by Galen, who condemned veneſection becauſe it is difficult to diſtinguiſh a vein from an artery, and from the danger of opening the latter inſtead of the former!

One of the lateſt writers on the ſubject, and who, from his rank and office of a teacher, muſt be ſuppoſed to ſpeak the opinion of a large portion of the faculty in Europe, I mean Burſerius, employs language ſcarcely leſs abſurd. Treating of the *putrid ſynochus**, he admits that "the quantity, heat, and quickened motion of the blood, the inflammatory diatheſis, and conſequent danger of inflammation, require repeated bleeding. The antients," he ſays, "relied ſo much upon it, as to preſcribe it in order to remove ſlight delirium: and they uſed to perform the reſt of the cure by means of diluents and refrigerants." Burſerius, however, is exceedingly cautious of relying upon his firſt indication, even though ſanctioned by the experience of the antients; and he qualifies the permiſſion to bleed, and the uſe of the other parts of the antiphlogiſtic plan, by obſerving "that in the letting of blood, and employment of refrigerants, a *certain mean* muſt be obſerved,"—and for this ſatisfactory reaſon, "*that the purulent concoction, which requires a pretty briſk febrile motion, and a certain degree of heat, may not be retarded;*" a caution to which particular attention muſt be paid, when the fever puts on the appearance of the *ardent*, *bilious*, or *malignant* kind!—Thus is experience daily ſacrificed to hypotheſis: this *certain mean* and qualification in the employment of an important and efficient remedy is the circumſtance which brings it into diſgrace, and makes that appear to be hurtful which is in reality the ſheet-anchor of practice in this and a thouſand other caſes.

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* Inſtitutions of the Practice of Phyſic, § 267.

Much of the difference of opinion that has prevailed among practitioners with regard to the propriety of bleeding in fever, is owing probably to ſufficient attention not having been paid to the period of drawing blood. Upon this point, fever and inflammation ſtand on ſimilar grounds. When inflammation in the lungs has gone on with regularity and violence for a certain number of days, no one ſuppoſes bloodletting to be competent to its immediate removal. The diſeaſe then terminates by ſpontaneous changes, as by copious ſecretion from the mucous membrane, effuſion into the cavities of the cheſt, or adheſion of the inflamed lungs to its ſides; or, on the other hand, by deſtruction of the natural organization of the part, ending in abſceſs, or phthiſis. When ſuch conſequences have taken place, or are become imminent and inevitable, bloodletting is not only in general uſeleſs, but prejudicial; by preventing, in the one caſe, thoſe natural proceſſes from going on properly, which are conſiſtent with, and neceſſary to, the patient's ſafety, as copious expectoration, or adheſion; and, in the other, by exhauſting his ſtrength, in fruitleſs attempts to remove an incurable malady. In like manner in fever, an evacuation that might have been proper and abſolutely curative, in the firſt or ſecond day of the diſeaſe, may be ineffective or injurious at a later period, as appears to be evinced by abundant evidence. Celſus ſays upon this point—*Veneſectio poſt quartum diem imbecillum reddere corpus poteſt non integrum*[*].

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[*] *Sanguinis mittendi opportunitas tanti ſæpe momenti eſt, ut cùm evacuatio hæc uno tempore proſit, in alio quodam ſummè officiat*—Willis *Pharm. Rational.*, p. II, c. i, ſect. iii, § 34. The ſame author remarks elſewhere—*In febre ardente, pleuritide, peripneumonia, phrenitide, apoplexia, aliiſque magnis morbis a ſanguinis turgeſcentia aut incurſu*

Dr. Ruſſel remarks of the plague, that, " in regard to evacuations in this diſeaſe, it ſeemed to me, from the moſt impartial and attentive obſervation I was capable of, that very plentiful bleeding in the beginning of the diſeaſe was of great ſervice, *but was always prejudicial after the firſt day**. The ſame remark has been made by others.

Dr. Mitchell, deſcribing the yellow fever as it prevailed in Virginia in the years 1741 and 1742, ſays: " the following ſeemed to be the only effectual prophylactic I ever knew tried, and which proved effectual in fifteen in one family, where none eſcaped without ſome preſervative or other; and wherever it was duly complied with, the good effects of it were very evident. I obſerved, that, before the fever formed itſelf, the ſure ſign of a received infection, ready to diſplay its tragical effects, was a *ſudden and unuſual pain in the head*, generally above one or both eyes, which in ſome remitted with ſhort intervals, and cauſed a giddineſs or vertigo, rather than ſharp pain, attended with an unuſual feebleneſs and languor of the body, and often a ſickneſs at the ſtomach: theſe complaints, I obſerved,

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*oriundis, phlebotomia diminuta, ſemper plus officit quam prodeſt.* Ibid. § 29.

* *Treatiſe on the Plague*, 4to, p. 137.

were little regarded by people till the fever ſeized them, very often all of a ſudden, a few hours afterwards. Upon the firſt complaint of this pain of the head, they had ſix or eight ounces of blood taken from the arm. Some fell into large ſweats or plentiful breathings ſoon after bleeding, by which their diſorders went off; but thoſe that did not ſweat, and their complaints continued, took a vomit of ipecac ſoon after bleeding, and, the night after the vomit, fell into the like ſweats, by the plentiful uſe of tepid diluents and warm covering. After theſe applications, *the diſtemper never formed itſelf*, as it *ever did* when theſe complaints were neglected; although many had a briſk acute fever after or in the time of their adminiſtration, for the ſpace of twelve or twenty-four hours, of the ſame nature with this fever when once formed; and all were more or leſs feveriſh in the time of their ſweats, which however went off with them, and never returned. In all thoſe that were bled, even in theſe circumſtances, the blood was thin, watery, and ſeemingly diſſolved, and that in winter; a thing very uncommon at that time of year in Virginia*."

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* See *Philadelphia Medical Muſeum*, No. 1.

Dr. Dryſdale, in the work quoted above, remarks upon this point, that bleeding, when uſed quickly after the attack, brought the fever to a cloſe on the firſt or ſecond day in a variety of inſtances. In ſome, he ſays, the diſeaſe diſappeared almoſt immediately. Bleeding ſeldom proved ſerviceable after the third day. The blood during the ſtate of oppreſſion, and in the firſt bleeding, ſometimes appeared diſſolved; but in ſucceeding bleedings it was often found to have acquired a firm conſiſtence.

Dr. Ruſh, in his deſcription of the fever which raged with ſo much violence at Philadelphia in 1797 (p. 125), remarks, that during the exiſtence of the premonitory ſymptoms, and before patients were confined to their rooms, a gentle purge, or the loſs of a few ounces of blood, in many hundred inſtances prevented the formation of the fever. He did not meet, he ſays, with a ſingle exception to this remark. He obſerves, that the mind was ſeldom affected by delirium after the loſs of blood, and that, when bloodletting had not been uſed, patients frequently died with convulſions. One lady, he remarks, was ſo weak in her viſion, that ſhe hardly knew her friends at her bedſide. This alarming ſymptom ſuddenly yielded to the loſs of four ounces of blood. "I began the cure," he adds, "in moſt caſes by bleeding, when I was called on the firſt day of the diſeaſe, and was happy in obſerving its uſual ſalutary effects in its early ſtage. On the ſecond day it frequently failed of doing ſervice, and on the ſubſequent days of the fever I believe it often did harm." P. 106.

He adduces a ſtriking inſtance of the preventive power of bloodletting and abſtinence, that was communicated to him by Dr. Borland, of the Britiſh military hoſpitals in the Weſt Indies. "In the beginning of Auguſt 1797, one hundred and nine Dutch artillery men arrived at Port-au-Prince in the iſland of St. Domingo, in the Bangalore tranſport. The florid appearance of the men, their heavy cumberſome clothing, and the ſeaſon of the year, ſeemed all unfavourable omens of the melancholy fate we preſumed awaited them. It was, however, thought a favourable opportunity by Dr. Jackſon and myſelf to try what could be done in warding off the fever. It was accordingly ſuggeſted to Monſ. *Conturier*, the chief ſurgeon of the foreign troops and the ſurgeon to the regiment, that the whole detachment ſhould be blooded freely, and that, the morning after, a doſe of phyſic ſhould be adminiſtered to every man. This was implicitly complied with in a day or two after, and at this moment in which I write, although a period of four months has elapſed, but two of that detachment have died, one of whom was in a dangerous ſtate when he landed; a ſucceſs unparalleled during the war, in St. Domingo. It is true, ſeveral have been attacked with the diſeaſe; but in thoſe the ſymptoms were leſs violent, and readily ſubſided by the early uſe of the lancet. The crew of the Bangalore, on her arrival at Port-au-Prince, conſiſted of twenty-eight men. With them, no preventive plan was followed: in a very few weeks eight died, and, at preſent, of the original number but fourteen remain."

It appears probable, alſo, that much of the ſucceſs derivable from bloodletting as a remedy for fever depends upon the quantity as well as the earlineſs of the evacuation. Sydenham, who had much experience of the effects of bleeding in the treatment of fever, and who reckoned it among the moſt powerful of remedies in this caſe, obſerved it to be injurious when not carried to a ſufficient length. He does not wonder, he ſays, that it ſhould fail when ſparingly employed, or late in the diſeaſe, after the petechial tumours ſhewed themſelves; for, when only a ſmall quantity of blood is taken away, the buſineſs is taken out of Nature's hands while ſhe is exerting all her powers in protruding them, and no other efficacious means are ſubſtituted for evacuating the morbific matter*. He quotes a long paſſage on the ſubject from Botallus, who laid the whole ſtreſs of the cure in this caſe on large and repeated bleeding. Botallus ſays, he was confirmed in the propriety of this practice by fifteen years' conſtant experience. He, equally with Sydenham, diſapproves of half meaſures; and aſks, whether it is a matter of wonder that a patient ſhould die under the loſs of a ſingle pound of blood in a diſeaſe which requires, perhaps, for its cure the loſs of four pounds?—The reaſoning of Sydenham upon this occaſion will not gain much attention at preſent; but we are not entitled on this account to reject the practical fact, which notwithſtanding might be well founded.

The quantity of blood drawn by Dr. Ruſh in the Philadelphia fever was in many caſes very large, and the recovery of the patients under ſuch circumſtances is an irrefragable proof of the utility of the practice. Such treatment could not have been nugatory: if wrong, it muſt have proved fatal. The truth of the ſtatement is put beyond queſtion, by reference to the names of the parties with whom the practice was adopted. A few patients, Dr. Ruſh ſays, required the loſs of a hundred ounces of blood to cure them. And even more than this was taken away in many inſtances by others. The following phyſicians of Philadelphia, who adopted the practice recommended by Dr. Ruſh, drew the quantities of blood annexed to their reſpective names from the perſons mentioned.

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* Sydenham *on the Peſtilential Fever of* 1665 *and* 1666.

Dr. Dewees took 176 oz. from Dr. Phyſick
Dr. Griffits--------110------------Mr. S. Thompſon
Dr. Stewart-------106------------Mrs. M'Phail
Dr. Cooper -------150------------Mr. David Evans
Dr. Gilleſpie------103------------Himſelf.

All the above, Dr. Ruſh adds, had a rapid and eaſy recovery, and now enjoy good health. He loſt but one patient who had been the ſubject of early and copious bleeding; and his death was evidently occaſioned by a ſupper of beef-ſteaks and porter, after he had exhibited the moſt promiſing ſigns of convaleſcence*.

Dr. Dryſdale's rule as to quantity was, when the weather became cool, to bleed till the pulſe began to loſe its fulneſs and tenſion, or till the pains began to moderate. It ſometimes, he obſerves, required twenty ounces to produce theſe effects. In ſome caſes, ſixteen or twenty ounces were drawn every ſix or ſeven hours, till the violent ſymptoms abated. In one inſtance, ſixty ounces were drawn in the ſpace of twenty hours, with the deſired event. During the continuance of great heat in the weather, ſmall and repeated bleedings were found more ſucceſsful.

Fainting, Dr. Dryſdale obſerves, ſeldom occurred from bleeding in the yellow fever. Weak women loſt fifteen or twenty ounces, and delicate girls of nine years of age twelve ounces or more, without inconvenience. Perſons were bled without fainting in this diſeaſe, who, on former occaſions, always fainted from bleeding.

No violent caſe, he adds, was cured by

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* Op. cit., p. 109.

one or two bleedings; while not one patient died who was bled four or more times, but ſeveral died who were bled leſs frequently*. This agrees exactly with what Cleghorn remarks with regard to an epidemic pleuriſy (fever complicated with inflammation of the lungs) that prevailed at Minorca†. He found, he ſays, that inſufficient bleeding did more harm than good: he then took away thirty or forty ounces within the firſt three days. But this did not do. He therefore bled till the pains abated, or faintneſs came on, which often required the loſs of ſixteen, twenty, or twenty-four ounces. This was repeated in the afternoon, or the next day, if the ſymptoms continued violent. From forty-eight to fifty-four ounces were often thus taken away in twenty-four hours. By theſe means, he ſays, the diſeaſe was as effectually removed as in any diſtemper whatever.

As the ſpeedy and complete cure of inflammations in general is found to depend very much upon bloodletting being carried to a ſufficient extent, in caſes where it is clearly indicated, ſo the ſame ſeems to hold good with regard to fever. "It was ſurprizing to obſerve," ſays Cleghorn, in the paſſage alluded to above, " how quickly the ſick recovered their health and ſtrength, notwithſtanding the great loſs of blood they had ſuſtained ; while many, who had been bled more ſparingly, continued in a languid infirm ſtate for months, without being able to get rid of the cough and pain in the breaſt*."

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* *Philadelphia Medical Muſæum*, loc. cit.

† *Diſeaſes of Minorca*, p. 256.

Similar conſequences very frequently enſue in regard to ſimple fevers, when ſuffered to run their courſe without any attempt being made to arreſt their progreſs. Diſorganization in greater or leſs degree (the never-failing reſult of violent and long-continued inflammation), takes place in the brain (as in the other caſe in the lungs), and the organ is long afterwards incompetent to the perfect performance of its functions. Hence diſtreſſing headachs, general debility, partial paralyſis, mental imbecility, with a long train of anomalous affections unmeaningly denominated *nervous*, are the frequent conſequences of fever, and often continue during life†.

* Ibid. p. 282.

† " In febribus quibuſcunque ferè continuis, ſiquando difficilè aut imperfectè judicantur, affectus pertinaces, *ſcil.* vigiliæ, necnon deliria, tremores, motus convulſivi, et diu hærentes nervoſarum partium imbecillitates ſequuntur." Willis *De Febre*, cap. 9: and again, cap. 10, ſpeaking of the putrid fever, he ſays, " Sæpius obſervavi, quando morbus criſi non ſolvitur, ægroti longa ægritudine decumbunt,

The propriety of the evacuating practice in the fevers above deſcribed is confirmed by the injurious effects of remedies of an oppoſite deſcription, as wine and opium. Dr. Dryſdale remarks, that they aggravated all the ſymptoms. And the ſame obſervation has been made by Wade, Moſeley, and many others. Schenkius declares that wine deſtroyed all thoſe who took it in the Hungarian fever, a diſeaſe of the peſtilential kind.

From what has been now ſaid, the concluſion, I think, is inevitable, that, whatever opinion may be formed with regard to bloodletting as a general remedy for fever, it is, under many circumſtances of the diſeaſe, not only ſafe, and practicable with impunity, but proves a prompt and effectual cure ;—that, when employed in the firſt ſtage of the diſeaſe, it is often capable of obviating the ſymptoms of greateſt danger that are apt to ariſe towards the end of fevers of a malignant character ;—and that, on many occaſions, it either prevents the action of the cauſe of fever on the body altogether, or

et motibus convulſivis et tremulis fiunt obnoxii." Such effects are only obſerved to follow fevers, not other acute diſorders, and evidently depend on an imperfect performance of the ſenſorial functions.

renders its effects comparatively mild and free from danger. Of all this, I truſt, ſufficient evidence has been adduced.

The arduouſneſs of the taſk, and that which demands the moſt ſerious attention of phyſicians, is to make the neceſſary diſcrimination; to diſcover the particular caſes and circumſtances under which the practice may be beneficial or otherwiſe—*hic labor, hoc opus eſt.* This is a ſubject of great difficulty, and one with regard to which much remains to be done. It requires for its complete elucidation, long and aſſiduous obſervation under every variety of circumſtance and ſituation; with a mind uninfluenced by prejudice, and unbiaſſed by preconceived opinions. It is not, indeed, the work of an individual, and hardly of an age; and can only be accompliſhed by the united and perſevering efforts of the many.

It is a matter of the firſt importance to diſcover the particular ſymptoms in fever that indicate the propriety of veneſection; and, on the other hand, no leſs ſo to become acquainted with the circumſtances that contraindicate its uſe. Are we to be guided by the appearances of general ſtrength in the ſyſtem; by the habit of body, age, or previous ſtate of health of the patient; by the ſtate of the pulſe; or by what other circumſtances? Theſe are queſtions that at preſent can only be imperfectly anſwered.

As far as can be judged from our preſent experience of the ſubject, it would ſeem that the moſt violent* ſtate of fever is the beſt adapted to this practice. We have ſeen that it has been employed with the greateſt freedom, and the moſt decidedly good effects, in the plague, peſtilential fever, and in the camp, hoſpital, and jail fever; in a word, in all thoſe whoſe fatality and violence have juſtly been ſtigmatized by the term malignity. While, by moderate bleeding, aided by an abſtemious mode of living, together with the temperate uſe of remedies calculated to diminiſh the irritability of the ſyſtem, and conſequently to render it leſs obnoxious to the action of the cauſes of fever (ſuch as the Peruvian bark and a guarded uſe of wine and alkohol), there is reaſon to believe that perſons living in the midſt of contagion may often eſcape its effects altogether; or where theſe take place, the future diſeaſe appears with mitigated ſymptoms, and of a benign character.

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* By the term violent fever, I do not mean mere violence of general vaſcular action, but that variety of the diſeaſe in which the pathognomonic ſymptoms are moſt ſtrongly marked, viz., the affection of the ſenſorium and functions immediately dependent on it.

It is equally certain, from the teſtimony already adduced, that the proſtration of ſtrength which accompanies the firſt attack of theſe fevers, as manifeſted in the muſcles of voluntary motion and in the organs of ſenſe, does not contraindicate veneſection, if employed ſufficiently early ; for example, within a day or two of the attack. Nor is a ſtrong, open, full pulſe an indiſpenſible requiſite, in order to warrant the practice. The action of the vaſcular ſyſtem is ſometimes oppreſſed in diſeaſes, as well as the voluntary power ; the pulſe then becomes low, feeble, and obſcure, but riſes after bleeding ; —a ſure indication this of the ſafety and propriety of the evacuation, and generally, perhaps, of the neceſſity of repeating it.

The heart, like other organs, derives its energy, mediately or immediately, from the brain. When the latter is in a ſtate of morbid action, and its functions thereby in a great meaſure prevented from going on, it is not to be wondered at that the heart and vaſcular ſyſtem ſhould occaſionally ſuffer. This probably depends in ſome degree on the particular part of the brain that is affected. The cerebellum, we know, has a more direct influence on the heart than the cerebrum, which is more particularly devoted to the organs of ſenſe and the muſcles of voluntary motion.

It is in hot climates eſpecially that fevers are found to aſſume the characters of malignity above mentioned. In theſe ſituations, all inflammations run their courſe with rapidity and violence: whatever is to be done by art in ſuch caſes, muſt be done promptly and with vigour. Whether the lungs, the abdominal viſcera, or *the brain in fever*, be the ſeat of inflammation, there is no ſafety but in large and ſpeedy evacuations, both by bleeding and other ways.

Such violence, however, in the character of fever is not excluſively confined to intertropical regions. The experience of the laſt two or three years has ſhewn, that this diſeaſe, when imported into temperate climates, and favoured by the hot ſeaſon, preſerves its malignant character, and calls for equally vigorous meaſures to ſuppreſs it. This has been the caſe at Gibraltar, Cadiz, and other parts of Spain ſituated in the Mediterranean; and there is no reaſon to believe that higher latitudes are altogether exempt from the danger of importation, though the diſeaſe might be expected to ſhew itſelf with milder ſymptoms. Even in our own climate, fevers now and then appear with their moſt formidable train of ſymptoms; and the experience of former times has ſhewn that this would more frequently be the caſe, were cleanlineſs and ventilation leſs attended to.

The great and immediate relief experienced from copious bloodletting in the fevers above deſcribed, is only to be accounted for, as it appears to me, upon the ſuppoſition of the diſeaſe having its foundation in the moſt active topical inflammation. Upon every other hypotheſis that has been given reſpecting the nature of fever, the practice is quite unintelligible: upon that which I have endeavoured to ſupport, it is eaſily explained; being in perfect analogy with the treatment of other inflammations.

It is a more difficult matter to determine with regard to the propriety of bloodletting in the mild form of fever, ſuch as it commonly appears in this country at preſent, and perhaps in ſimilar latitudes in general, under ſimilar circumſtances. There is nothing, it muſt be owned, in the ordinary character of the *typhus mitior*, or low nervous fever, either in regard to pain or vaſcular action, that ſeems imperiouſly to demand ſo active a mode of cure. In fact, ſo contrary is bloodletting in theſe caſes to the ideas and practice of the generality of modern phyſicians, that he who ſhould venture to propoſe it among the ordinary means of cure would ſcarcely eſcape the charge of raſhneſs. I may repeat here, however, what was remarked above, that the repugnance to bloodletting which at preſent ſubſiſts among practitioners is founded more in opinion than in obſervation. Few, if any, of thoſe who now condemn it, have ever witneſſed its employment, and are therefore not competent to decide the queſtion.

It is natural enough, that thoſe who conſider debility as the eſſential part, or proximate cauſe, of typhus, ſhould look with abhorrence on a practice that ſo powerfully and rapidly reduces the ſtrength of the ſyſtem. But if my idea of the nature of fever be at all well founded, the matter appears in a very different light. We may without any difficulty conceive that the diſeaſe will, in many inſtances, yield to bloodletting; while, in many others, this may be a leſs proper remedy : juſt as happens with regard to other inflammations; which are ſometimes beſt treated by active evacuations, and at others by a totally oppoſite method of cure.

If the debility obſerved in typhus at its very commencement be, as I ſuppoſe, the conſequence of topical inflammation in the brain, and not the immediate effect of the remote cauſe, then it is plain, *from theory*, that whatever is capable of relieving or diminiſhing the quantum of topical diſeaſe is the proper remedy, whether it be a debilitating power, or act in any other way. In ſuch caſe, bloodletting, by reſtoring the *ſource* of ſtrength and energy to the proper exerciſe of its functions, may be ſaid in reality to be a ſtrengthening remedy; and ſuch it actually proves to be, both in malignant fever, and in various topical inflammations, under which the powers of the ſyſtem are depreſſed, or, as it were, abſorbed in the affected part. The pulſe, in theſe caſes, that was before ſmall, contracted, feeble, and eaſily compreſſible, becomes after bleeding large, open, and ſtrong; and the voluntary muſcles recover a conſiderable degree of their former activity.

Whether, in fact, bloodletting be capable of producing ſuch effects in ordinary typhus fever, is a queſtion that can only be decided by experience; and to this I wiſh to refer it. There will be found in the ſecond part of this work ſome caſes that tend to prove the affirmative; but they are too few to eſtabliſh ſo important a point in regard to general practice. On this account, I give them with much heſitation, though with entire confidence as to the correctneſs of the ſtatement, which is certainly not overcharged. What I ſhall at preſent obſerve further on the ſubject, is, I readily acknowledge, chiefly theoretical,—a deduction merely from the doctrine I have endeavoured to lay down; and therefore to be received with due caution.

It has been ſaid, and urged as an argument to prove that typhus or low nervous fever conſiſts eſſentially in debility, that women, and, in general, the delicate and infirm, are more ſuſceptible of the infection of theſe fevers than the ſtrong and vigorous. Of the truth of this, judging from my own obſervation, I am by no means convinced. One ſource of fallacy here has been already mentioned; viz., that ſuch perſons, from being uſually employed in domeſtic offices about the ſick, are conſequently more in the way of contagion. But admitting the fact, that the feeble and debilitated are more ſuſceptible, it is certain that the diſeaſe attacks the robuſt and vigorous with greater violence, and that ſuch are more endangered by it. The proſtration of ſtrength in the latter is at leaſt as great as in the former. But is it conceivable that a perſon, who, but a few hours before, could have borne, without detriment, the loſs of a pound or two of blood, and whom we ſhould not heſitate to bleed to this amount, in the event of his being attacked with pulmonary inflammation or various other diſeaſes, can be brought into danger by the loſs of a few ounces of blood, where there has been, in this ſhort interval, no evacuation of any kind, nor exhauſtion of the vital powers by exceſſive exertion?

The powers of the ſyſtem in fever are depreſſed, not abſolutely weakened; like a ſpring which is prevented acting by a weight, but which nevertheleſs ſtill retains its elaſticity, ready to act when the oppreſſing force is taken away. The difference between this depreſſion of ſtrength and abſolute weakneſs is very obvious, and has been noticed by phyſicians of the beſt obſervation. It is in nothing more ſtriking than in this reſpect, that depreſſion of ſtrength diſappears at once by the removal of the diſeaſe which occaſioned it, even though this be effected by bloodletting, or other debilitating means; while actual weakneſs, as it was at the firſt independent of the diſeaſe, or at leaſt only a remote conſequence of it, ſo it remains though the diſeaſe which it accompanies be removed.

According to the principles here advanced, as the mild form of fever, and the more violent or malignant, differ from one another chiefly in degree, not in their nature or ſeat, it might be concluded, *à priori*, that the ſame mode of treatment would be proper in both; with this difference, however, that while the malignant fever, by its rapidity and violence, demands and juſtifies the uſe of the moſt active means for ſuppreſſing it, the low nervous kind, being attended with comparatively but little danger, may often be ſafely entruſted to milder remedies, and which are not ſo liable to abuſe or miſapplication.

Still it is of importance, and highly deſirable, to be able to detect, as far as poſſible, the circumſtances in which a more active mode of cure ought to be employed; with the view of cutting ſhort, or of bringing to a ſpeedier termination, the fevers of temperate climates. It argues little in favour of our art, that a fever is ſuffered to run through its courſe of three weeks or a month of active diſeaſe, and twice as long a period of convaleſcence, almoſt without an attempt being made to arreſt its progreſs:

for the treatment of fevers at preſent can be conſidered as little better than palliative.

The limitations to the uſe of bloodletting in typhus (ſuppoſing it to be proper) appear to me at preſent, from a theoretical view of the ſubject, and according to the experience I yet have had, to be principally the following :—*firſt*, that it be confined, as in malignant fever, to the very early ſtage of the diſeaſe ; as it is at this period that the topical affection, in all caſes of inflammation, is moſt eaſily ſuperſeded and overcome :—*ſecondly*, that it be employed only in habits of previous ſtrength ; ſuch, in a word, as we ſhould not heſitate to have recourſe to bloodletting in, in the caſe of their being attacked by other inflammations. Under theſe reſtrictions, and with due regard to quantity, I cannot eaſily bring myſelf to believe that the practice would be attended with hazard, or that it would not contribute materially to check the progreſs of the diſeaſe, as readily as in other inflammations. But however impreſſed I may be with the juſtneſs of this reaſoning, it is with extreme caution that I would apply it in practice, or recommend it to the adoption of others; and not, indeed, without the fulleſt conviction that the object aimed at, namely, the cutting ſhort the progreſs of the diſeaſe, is one of conſiderable magnitude, and capable of being attained without, upon the whole, increaſing the patient's riſk.

When fevers of this deſcription occur in habits previouſly weak and infirm, the propriety of bloodletting appears doubtful; or rather would ſeem, at firſt view, to be obviouſly and totally improper; and eſpecially as the fatality of the diſeaſe in general, under proper management, is not ſo great as to juſtify, in the opinion of many, the employment of a remedy that, if ill applied, may be attended with dangerous conſequences. Even here, however, the objection is probably rather ſpeculative, than the reſult of actual experience; for ſcarcely any one, at preſent, thinks of employing veneſection under circumſtances of this kind. We have ſtill much to learn with regard to the effects of bloodletting in diſeaſes in general. That it cannot be employed, without injury, in weak habits, to the ſame extent as in the ſtrong, is very manifeſt from experience; but it has not been ſo clearly proved that it may not be an uſeful auxiliary, when nicely adjuſted to the exiſting ſtate of the ſyſtem.

Where the ſtrength of a patient is ſuch, as not to bear the loſs of ſix or eight ounces of blood, it is ſeldom thought right to preſcribe veneſection at all, which is in ſuch caſes almoſt univerſally deemed improper. Such a concluſion, however, appears to me to be queſtionable.

In a great number of diſeaſes, it is ſufficient that a change be induced in the general ſtate and mode of acting of the ſyſtem, in order to effect a cure: and this may be often accompliſhed by different and oppoſite means, without any regard to proximate cauſes. Bloodletting is a remedy eminently capable of inducing ſuch a change, and has often effected cures where, from theory, it has been ſuppoſed to be contraindicated. Very ſenſible and decided effects are frequently produced by the loſs of ſmall quantities of blood. Thus, it is not unuſual to obſerve fainting take place even in ſtrong men, upon the loſs of a few ounces of blood from the arm; a decided proof of an entire change in the action of the veſſels of the brain.

In an inſtance of *pneumonia* I lately witneſſed of three weeks ſtanding, in which bloodletting had been neglected at the beginning, and in which, from the continuance of pain and fever, with great difficulty of breathing, and a pulſe approaching to the hectic ſtate, ſuppuration was to be apprehended, the loſs of only three ounces of blood produced a very ſenſible feeling of weakneſs in the patient, which did not go off for ſeveral days. The benefit received, however, was not the leſs certain. The pain was almoſt inſtantly relieved by it, the fever and quickneſs of pulſe diminiſhed, the expectoration became free; and from this moment might be dated the commencement of the patient's recovery, which was evidently accelerated by a frequent repetition of bloodletting to the ſame amount, at intervals of ſix or eight days. The blood, at firſt, was covered with a thick inflammatory cruſt, and the coagulum became contracted into almoſt a globular form; but this appearance of the blood gradually diminiſhed as the diſeaſe ſubſided.

In caſes where the ſtrength does not admit of making bloodletting the principal means of cure, it may ſtill, in reduced quantity, prove an uſeful auxiliary, and render the uſe of other means both ſafer and more effectual. In other diſeaſes conſiſting in inflammation, this is well known to be the caſe, particularly with regard to bliſters, opiates, and diaphoretics of a ſtimulant nature. Theſe can often be employed with ſafety and effect after bleeding, though they are frequently injurious before. And evidence to the ſame purpoſe has been adduced in regard to fevers.

Upon the whole, it is obſervation and experience that muſt decide ultimately as to the preciſe value of bloodletting as a remedy for fever. I only wiſh to ſhew, that while the practice may be ſupported upon theoretical grounds, and on analogy; and has in ſome degree been ſanctioned by experience; the objections that have been made to it are likewiſe in a great meaſure theoretical: and, therefore, that the queſtion ought ſtill to be conſidered as undetermined, and referred to experience alone, as the only means of ſatisfactorily deciding it.

Admitting bloodletting to be, on certain occaſions, a proper remedy for fever, ſome advantage may be derived, at times, from the particular mode of adminiſtering it. If fever conſiſt eſſentially in a topical inflammation of the brain, it ought, like other inflammations, to be ſuſceptible of relief from topical remedies. On this ground, there is, in fact, an entire analogy between fever and other inflammations. Thoſe who have objected to general bloodletting for the cure of fever have not heſitated to recur to local evacuations of blood from the head, in caſes where the functions of the brain were obſerved to be more than ordinarily affected. And by this means, not only the moſt preſſing ſymptoms have been relieved, but the whole diſeaſe has ſometimes been carried off.

There are many caſes where general bloodletting may appear objectionable in fever; as in debilitated habits, in infants, and under other circumſtances which will readily occur to practitioners, and which prohibit its employment in other inflammations. In ſuch caſes, local bleeding, as by leeches or cupping, may form an important addition to the other means of cure.

Opening the temporal artery has been propoſed and practiſed, as the moſt powerful means of moderating vaſcular action in the brain. But to this there are, I think, weighty objections. The blood in this way cannot be drawn ſo quickly as by veneſection, a circumſtance that is occaſionally of ſome moment. Nor does it appear likely that dividing a ſmall branch of the external carotid in the temple can be productive of any ſpecific benefit, or materially influence the condition of the large veſſels which immediately ſupply the brain with blood, to wit, the internal carotid and vertebral arteries; for the connection of theſe with the minute branches of the external carotid artery is trifling and remote. But the greateſt objection to the practice of opening the temporal artery ariſes from the conſequences of the operation. The preſſure neceſſarily applied, in order to guard againſt future hæmorrhage, interrupts the circulation in a number of the ſuperficial veſſels of the head, and of courſe tends more or leſs to increaſe the force of circulation in thoſe that are free. This effect muſt be communicated in ſome degree to the internal carotid arteries; at leaſt it muſt be ſo, if there is any foundation for the ſpecific advantages expected to be derived from opening theſe veſſels.

Bleeding from the jugular vein would ſeem to promiſe the greateſt advantages in affections of the head; while this veſſel, from its ſize and ſuperficial ſituation, offers every facility in the operation. It was a general practice with the ancients to bleed in this vein, in all inflammatory diſorders of the head and neck: in modern times, however, the practice has gone greatly into diſuſe, though probably undeſervedly. The free communication there is between the branches of the external and internal jugulars, cannot but render the drawing of blood by the former a ready and powerful means of leſſening the force of circulation within the head. Accordingly, it has been obſerved that fainting takes place more readily by bleeding from the jugular, than in the ordinary mode of veneſection in the arm*,—a clear proof this of a ſuſpenſion of action in the veſſels of the brain. Bonetus informs us, that, in the year 1768, fevers were very prevalent, in which the brain was more than uſually affected. Bleeding largely from the jugular vein was found a ſovereign remedy in theſe caſes†.

Dr. Fordyce (whoſe obſervations in regard to practical points are always entitled to great attention), in the paſſages quoted below, declares himſelf hoſtile to the uſe of bloodletting in fevers. "If the diſeaſe which the author has endeavoured to define as fever be only meant, the taking blood from a large vein, in any part of the body indiſcriminately, never diminiſhed, ſhortened, nor carried off a fever in any caſe he has ſeen; *nor has he found any on record* in which it had this effect.‡"—And he adds, "taking away blood from the arm, or from any large vein, neither increaſes nor diminiſhes a fever, nor alters its courſe, as far as he has ſeen."

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[*] Heiſter's *Surgery*, p. II, ſect. 1, c. 7.

[†] *Sepulchret. Anat.*, lib. 4, ſect. 1, obſ. 3.

[‡] *Third Diſſ. on Fever*, p. 2, p. 5.

Again—"The further debility ariſing from emptying the veſſels, by taking away a quantity of blood, is often ſuch as to deſtroy the patient in the remaining part of the diſeaſe. Patients in conſequence have been very often cut off, where blood has been taken indiſcriminately from any large vein at the beginning of the diſeaſe, as the author has ſeen in a great many caſes*."

This would ſeem deciſive againſt the practice of bleeding in fever: but it is to be taken with ſome conſideration. Dr. Fordyce is here giving the reſult merely of his own obſervation; and, as his practice was confined to London, his remarks apply, of courſe, only to the diſeaſe as it appears in temperate climates, and even as modified by the air and modes of life of a large city. Allowing, therefore, that he is correct in his obſervation, it cannot juſtly apply to fever under other circumſtances.

When he ſays, that he has neither ſeen, *nor found any inſtance on record*, in which bloodletting has had the effect of diminiſhing, ſhortening, or carrying off a fever, he goes farther than the hiſtory of the diſeaſe will bear him out; for indubitable evidence has been brought forward (and more will be hereafter adduced), in which the contrary has taken place. There is likewiſe an obvious inconſiſtency in the paſſages quoted above, which muſt tend to weaken their effect. He ſays, " the further debility ariſing from emptying the veſſels by taking away a quantity of blood, is often ſuch as to deſtroy the patient in the remaining part of the diſeaſe;" yet he had juſt before remarked, " that taking away blood from the arm, or from any large vein, neither increaſes nor diminiſhes a fever, *nor alters its courſe*, as far as he has ſeen."

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* *Third Diſſ. on Fever*, p. 12.

Another objection might be made to the opinions above given; which is, that no attention appears to have been paid to the circumſtances of time and quantity, circumſtances which, it is evident from what has been already obſerved, materially influence the reſult.

But even allowing Dr. Fordyce's objections to general bloodletting as a remedy for fever to be ever ſo well founded, his teſtimony in favour of local bleeding from the veſſels of the head and neck is ſtrong and deciſive; not merely as mitigating the moſt preſſing ſymptoms, but in entirely carrying off the diſeaſe: as may be ſeen in the following paſſages.

"Taking away blood from the veſſels of the head has, in ſome caſes," he remarks, "immediately carried off fever: it has alſo tended to diminiſh delirium accompanied with fulneſs of the veſſels of the head, even when it does not ſhorten the diſeaſe*."

"In the ſecond ſpecies of delirium (i. e., attended with fulneſs of the veſſels of the eye, fluſhing in the face, and, on diſſection, fulneſs of the veſſels of the brain), taking away blood by opening the external jugular vein, and letting five or ſix ounces of blood flow out, has diminiſhed the delirium conſiderably, ſometimes has carried it off entirely, *and with it the whole fever.* The ſame effects have been produced by applying two, or three, or four leeches:—this laſt method is more efficacious†."

"At the beginning of fever, it happens ſometimes that very violent pain takes place in the forehead, which feels to the patient as if it affected the integuments of the cranium, and were merely external. In this caſe, the author has ſeen three or four leeches, applied to the temples, give conſiderable relief to the patient, by removing the pain; *and ſometimes they have carried off the whole fever**."

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* *Third Diſſ. on Fever,* loc. cit.

† Ibid. p. 127.

Upon the above I would only remark, that it appears difficult to conceive a reaſon why bleeding from the jugular veins, or by leeches to the temples, ſhould not only relieve a particular ſymptom, but ſometimes carry off the whole diſeaſe, if this had not its ſeat eſſentially in the head, and were not of an inflammatory nature.

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Upon the whole it may be obſerved, that the well eſtabliſhed fact, of the cure of fevers of different deſcriptions by large and repeated bloodletting, is totally irreconcileable with any of the hypotheſes heretofore given with reſpect to the nature and ſeat of the diſeaſe; while it is readily explained, as it appears to me, upon the principle here aſſumed. It demonſtrates in the cleareſt manner that the diſeaſe is not ſeated in the general maſs of fluids; for the removal of a few ounces, or even pounds, of blood could have no effect in altering the compoſition of the whole maſs, nor in withdrawing a cauſe that is univerſally diffuſed through the ſyſtem. Nor can fever be owing eſſentially to any ſpiſſitude, or tenuity, or putreſcency of the circulating fluids; for we find the blood, when drawn in fever, putting on at different times a variety of appearances, while at others it is not viſibly changed from the natural ſtate. It cannot depend upon debility as its proximate cauſe, whether this be ſuppoſed to occaſion ſpaſm followed by reaction in the ſyſtem, or to continue through the whole courſe of the diſeaſe; for debility that is primary and eſſential cannot, ſurely, be removed by loſs of blood.

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* *Third Diſſ. on Fever*, p. 129.

In no other way, as I believe, can the ſymptoms of malignant fever be explained, nor the cure of it by bloodletting be underſtood, than by the admiſſion of inflammation in the brain as the eſſential or proximate cauſe. Admit this, and the difficulties vaniſh. We can readily underſtand, upon this principle, why the action of remote parts, and indeed of every part, of the ſyſtem, ſhould languiſh or be ill performed, when the *great center* of ſenſation and movement is itſelf rendered incapable of duly continuing its functions: we can ſee why early and copious bleeding ſhould anticipate, as it were, and prevent the appearance of the moſt malignant ſymptoms in the ſubſequent ſtages of the diſeaſe; for by diminiſhing (where it does not totally cure) the topical affection in the brain, this important organ is enabled to carry on its functions more perfectly than it could otherwiſe have done: we ſee, in fine, why the young and vigorous, and the plethoric, ſuffer more from fevers of this deſcription than the weak and infirm;—than the very young, or the very old; becauſe, in ſuch habits, it is the nature of inflammation to proceed with greater violence, and to terminate more ſpeedily in diſorganization of the affected part, with the conſequent and neceſſary deſtruction of the functions dependent on it.

But if bloodletting be employed for the cure of fevers, we ſee alſo, from what has been adduced above, of what importance it is that it be early had recourſe to, and to a proper extent. Authors are almoſt unanimous in aſſerting, that although bleeding may be uſeful and effectual in the firſt or ſecond day of the diſeaſe, it is generally hurtful at a later period. It muſt be done, if done at all, before the chain of febrile actions is fully eſtabliſhed in the ſyſtem, and before the part primarily diſeaſed, to wit the brain, has ſuffered in its ſtructure or organization: at a later period it will prove ineffectual, and perhaps conduce to a fatal iſſue. The ſafety of it as a remedy for fever depends entirely on this being attended to.

## Sect. II.---*Of Vomiting, as a Remedy for Fever.*

NO fact in medicine is better aſcertained, than the power of EMETICS in the cure of fevers of every deſcription. Like bloodletting, their efficacy depends much on the earlineſs of their adminiſtration. When given at the very commencement of the ſymptoms, and before the diſeaſe is ſo fully formed as to have acquired the force of habit, they often put a ſudden and entire ſtop to its progreſs; and where they fail of producing this effect, they ſeem to check the violence of the diſeaſe, and mitigate its future ſymptoms.

Theſe effects have been obſerved a thouſand times in ſimple fever,—in the more violent and malignant kind,——and even in ſome of the *exanthemata*. The *ſcarlatina* has repeatedly been checked in its career, and the patient reſtored almoſt immediately to health, by the timely adminiſtration of an emetic. There is no evidence, that I know of, of its having done ſo much in ſmall-pox or meaſles; but though it does not appear capable of at once cutting ſhort the progreſs of theſe diſeaſes, it has nevertheleſs the ſame beneficial influence as in ſimple fever on the future character of the diſeaſe. This effect of emetics is probably, in a great meaſure, derived from their determining powerfully to the ſurface of the body, and relieving proportionally the internal organs from the force of the circulation.

From theory, the uſe of emetics in fever might be deemed improper, and even dangerous, from their known tendency to determine the blood with greater violence towards the head: and, in fact, they have been often objected to on this account. No doubt, ſome caution is neceſſary in their adminiſtration; and experience ſeems to have aſcertained, that they are rendered not only more ſafe, but more effectual likewiſe, by previous loſs of blood. But experience has alſo ſhewn that they may be ſafely employed, in a great majority of caſes, without ſuch a precaution. Where the action of the heart and arteries is already violent, full vomiting certainly cannot be employed without ſome degree of hazard; and it has ſometimes proved fatal in ſuch caſes, by occaſioning a rupture of veſſels in the brain or other vital organ.

Emetics, when adminiſtered ſo as to occaſion nauſea merely, without actual vomiting to any extent, are unqueſtionably efficacious in moderating febrile movements, and occaſionally in bringing them to a criſis. This latter fact may be collected from the deſcription of the effects of nauſeating remedies in fever, given by Dr. Cullen, although there may be no foundation for the hypotheſis by which he explains their mode of acting. They, however, produce this effect ſpeedily, or not at all: there is very little, if any, evidence to prove that the continued employment of them, for many days in ſucceſſion, has been productive of any material advantage; while a perſeverance in their uſe is apt to occaſion dyſenteric purging, and to wear out the ſtrength of the patient rapidly.

In the plague which raged at Cracow in Poland, in the year 1707, the mortality was exceſſive. The ſymptoms chiefly were, anxiety, ſadneſs, green and yellow vomiting, rigor and horror ſucceeded by heat, laſſitude, univerſal pains, intolerable cephalalgia with a ghaſtly countenance, conſtant toſſing, and delirium. Women even expoſed themſelves naked, like maniacs. To theſe were added all the other ſymptoms that are found to accompany fevers of the moſt malignant kind. When ſweats broke out ſpontaneouſly, the ſick were relieved. But medicine, it is ſaid, was of little uſe, except *emetics*, which, if given at the very beginning, were found to be almoſt an *antidote* to the diſeaſe; as two or three grains of emetic tartar*.

In other caſes of malignant fever, emetics have been employed with more or leſs benefit. In the fever which annually rages at Senegal on the coaſt of Africa in the rainy ſeaſon, the diſeaſe, ſays Dr. Lind, ſeemed to proceed from a poiſon, as it were, got into the ſtomach; beginning with ſevere retchings, and often with a vomiting of bile. Upon its firſt attack in this way, he adminiſtered a few grains of emetic tartar, and found, if this medicine operated upwards and downwards, it generally relieved, and often entirely abated, all the ſymptoms: but this lucid interval continued only for a ſhort time; for, commonly in ſix hours afterwards, the fever and vomiting returned, accompanied with a delirium. The adminiſtration of a ſecond emetic did not produce ſo good an effect, or a remiſſion of the fever*.

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* See a deſcription of this malady by *Joh. Bern. Sthaar*, M.D., in the *Acta Erudit.*, tom. 4, ab an. 1701 ad 1710, 4to, p. 491.

The action of emetics in curing fever appears to be preciſely analogous with their effects in the cure of other inflammations, though they have not been ſo much uſed for the latter purpoſe as they probably merit. It is in pulmonic affections principally that they have been employed; and their utility in many of theſe caſes is not to be queſtioned. In *hernia humoralis*, alſo, the benefit derivable from them is well aſcertained. They have likewiſe been applied with advantage in inflammatory affections of the joints.

In order to account for the efficacy of emetics in the cure of fever, it is only neceſſary to advert to the intimate relation that ſubſiſts between the brain and ſtomach, and the influence exerted by each over the other, reciprocally. Let the brain be injured by a ſhock, or by compreſſion, and the injury is immediately pointed out by nauſea and vomiting, almoſt as clearly as by the diſturbance of its own peculiar functions. On the other hand, a ſtate of nauſea, any how induced, depreſſes at once the energy of the brain, and with it that of the whole vaſcular ſyſtem. This is evident in the paleneſs, coldneſs, and general feeling of debility, that announce the approach of vomiting, and which ſufficiently explain its beneficial influence on inflammation in general, but eſpecially when this diſeaſe ariſes in the brain itſelf.

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* Lind *on Diſ. of Hot Climates*, p. 54.

## Sect. III.---*Of Purging, as a Remedy for Fever.*

NEXT to bloodletting, purging is, perhaps, the moſt powerful and moſt generally applicable remedy in the treatment of inflammation, eſpecially when ſeated in the ſuperior parts of the body. Accordingly, purgatives have been always held by practitioners in great eſteem in diſeaſes of the head, and have been ſuppoſed to operate by *derivation* or *revulſion*;—an antiquated doctrine, but which appears, in the main, to be well founded. It is certain that the force of circulation may be directed towards different parts of the ſyſtem, and that topical affections are thus often ſuſceptible of relief or aggravation. The action of purgative medicines undoubtedly is attended with an increaſed determination of the fluids towards the abdominal viſcera, which tends greatly to counteract an active congeſtion in other and diſtant parts. This appears to be one ſource of the benefit derivable from purgatives in the treatment of diſeaſes. They alſo produce no ſmall effect as evacuants, and are thus adapted to the cure of inflammatory diſorders.

It is in affections of the head, eyes, and throat, that purgatives have been more particularly celebrated: they have, in all ages, been a favourite remedy for theſe complaints. On this account, they would ſeem well adapted to the cure of fever, upon the ſuppoſition that its nature and ſeat are as above ſuggeſted. As being a debilitating remedy, however, purging, as well as bloodletting, has been in a great meaſure diſcarded from modern practice in fevers. Yet there is much ſatisfactory evidence to ſhew, that it may be employed with advantage in fevers of various deſcriptions, even ſuch as are characterized by great debility, as the low fever or *typhus mitior*, and remittents.

In the Philadelphia fever, Dr. Ruſh exhibited draſtic purges, as calomel and jalap, with a degree of ſucceſs unequalled by any other remedy. He conjoined with theſe cathartics, bloodletting, and the other parts of the antiphlogiſtic plan. The doſe exhibited was ten grains each of calomel and jalap, repeated every ſix hours, until it procured four or five large evacuations. The effects of this remedy, he ſays, not only anſwered, but far exceeded, his expectations. It perfectly cured four out of the five firſt patients to whom he gave it, notwithſtanding ſome of them were advanced ſeveral days in the diſorder. This practice he learned from a manuſcript account of the yellow fever, as it prevailed in Virginia in the year 1741, which had been put into his hands by Dr. Franklin, pointing out the utility of evacuations in the cure of that diſeaſe.

It is proper to obſerve, that, at the firſt appearance of this fever, Dr. Ruſh was led, by the ſymptoms, to conſider it as a diſeaſe of debility; and he treated it accordingly by bark in all its forms, conjoining with this, wine, brandy, and aromatics; and he applied bliſters to the limbs, neck, and head, with a ſimilar view. He wrapped the patients alſo in blankets dipped in warm vinegar, following the practice recommended by Dr. Hume; and he likewiſe rubbed mercurial ointment on the region of the liver. But none of theſe remedies, he ſays, appeared to be of any ſervice; for only three out of thirteen recovered to whom they were applied*.

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* 'Account of the Bilious Remitting Yellow Fever, as it appeared in the City of Philadelphia in the Year 1793,' *paſſim*.

In a diſeaſe called by Dr. Moſeley the *putrid bilious fever*, which prevailed at Jamaica in the year 1780, the extreme weakneſs into which every perſon ſunk who was attacked, led to a mode of treatment, at firſt, by bark and cordial medicines, which did not prove ſucceſsful. Dr. Moſeley therefore "adviſed purging at the firſt onſet of the diſeaſe, and directed it to be continued until contraindicated by weakneſs. But ſo far," he ſays, "was the reſult of that apprehenſion from being confirmed by the event, that it was found that the men acquired ſtrength in proportion as they diluted and were purged." The purgative employed was a ſolution of *manna* and *cream of tartar*. "We did not loſe," he adds, "one man after this mode of treatment was adopted;" whereas, at firſt, every man that was ſeized, died*. In the *endemical inflammatory fever*, commonly called the *yellow fever* by writers, purging was employed with ſcarcely leſs advantage, after bloodletting, to a large amount, had been premiſed†.

Mr. Bryce, in his account of a fever

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* 'Treatiſe on Tropical Diſeaſes, by Benjamin Moſeley, M.D.' 3d edit., p. 200.

† Ibid. p. 459.

which appeared on board the *Buſbridge Eaſt Indiaman*, during her voyage from England to Madras and Bengal, in the year 1792, and which had all the malignant characters of the yellow fever, obſerves, that he truſted the cure almoſt wholly to purging. He found, he ſays, that by means of the moſt draſtic purgatives, *provided early recourſe was had to them*, he had acquired complete controul over the diſeaſe. He gave for the purpoſe large doſes of calomel, following it by a ſolution of purging ſalts with emetic tartar. Sometimes the calomel was given in combination with jalap, or the cathartic extract; and, on ſome occaſions, even with gamboge. He has often given, he remarks, a briſk cathartic of the kind above mentioned, when the pulſe was ſo feeble as ſcarcely to be felt;—when hæmorrhages, low delirium, nervous tremors, and faintings, ſeemed to indicate the greateſt debility;—and, after ſeveral copious, viſcid, and extremely putrid evacuations, procured in this manner, he had the ſatisfaction to find that the patient very ſoon acquired great increaſe of ſtrength;—that thoſe threatening ſymptoms went off entirely;—and that, by continuing thoſe evacuations according to circumſtances, the diſeaſe was ſoon brought to a happy termination. Their good effects were ſo inſtantaneous, that he has ſeen a man carried upon deck, perfectly delirious, with *ſubſultus tendinum*, and in a ſtate of the greateſt apparent debility, who, after one or two copious evacuations, has returned of himſelf, compoſed, aſtoniſhed at his newly acquired ſtrength, and declaring himſelf to be infinitely recovered; which indeed, Mr. B. ſays, was evident to every one from his changed countenance and general appearance*.

Mr. Bryce is of opinion, that a ſimilar treatment might perhaps be applicable in the fevers of this climate, of the typhus kind; and certainly it would ſeem, from the above, that the debility attending theſe fevers can form no deciſive objection to the practice. Were there any doubt, however, that the fevers of this country are curable in many caſes by purgatives, it muſt have been removed by the late valuable publication of Dr. Hamilton, of Edinburgh, whoſe teſtimony on this ſubject is too ſtrong to be queſtioned†. The particular mode of adminiſtering them, with the cautions neceſſary in their uſe, will come to be conſidered hereafter.

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* 'An Account of the Yellow Fever, with a ſucceſsful Method of Cure. By *James Bryce*, Surgeon.' London, 1796.

† 'Obſervations on the Utility of Purgative Medicines in ſeveral Diſeaſes. By *James Hamilton*, M.D.' Edinburgh, 1805.

Some phyſicians (and among others the learned Preſident of the Medical Society of London, in a work on Fevers publiſhed ſeveral years ago*) conſider the *primæ viæ* as the primary ſeat of fever; and, conſiſtently with this idea, they make the chief indication of cure to conſiſt in the evacuation of the ſuppoſed cauſe in the readieſt manner, by vomits and purges. Whether this theory be well founded or otherwiſe, I ſhall not now ſtop to inquire; but it is reaſonable to infer that the practice ariſing out of it had been found uſeful. If the pathology of fever which I have ventured to ſuggeſt be the true one, purging will come to be much more frequently employed in the cure of fever than hitherto, as it is probably applicable in many circumſtances in which blood-letting may be leſs proper.

Not only have purgatives been employed with good effect during the courſe of fever, but they have been found powerful likewiſe in preventing relapſe. Dr. Jackſon, in his *Remarks on the Conſtitution of the Britiſh Army* (p. 172), obſerves, "that relapſes (in fever) are prevented with much certainty, by occaſional briſk, even ſtrong, purgatives; and by emetics." In the caſe of intermittents, however, it has been remarked by ſeveral accurate obſervers, that purgatives have a tendency to bring back the paroxyſms, after the diſeaſe is apparently put a ſtop to. Upon what this ſeeming anomaly, ſo oppoſite to what occurs in continued fever, depends, I am quite unable to diſcover.

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* *Obſervations on Epidemic Diſeaſes:* by James Sims, M.D. 8vo, 1773.

It is in the diſorders of infants that the efficacy of purgatives in taking off fever is moſt ſtrikingly diſplayed. Their utility here is ſo great and decided, as to have led to the ſuſpicion that the real ſeat of diſeaſe in all theſe caſes was the *primæ viæ*, and that purgatives merely operated by removing the cauſe. A diſordered ſtate of the ſtomach and bowels is no doubt capable of inducing *brain-affection* in infants; but the latter is alſo frequently the cauſe of the former; and the two affections are in no caſe ſo identical or intimately connected, as not to demand a ſeparate inveſtigation. The good effects of purgatives, therefore, in the treatment of children's diſeaſes, eſtabliſhes nothing certain with regard to their ſeat or origin. This point will be reſumed hereafter.

Some practitioners have denied altogether the utility of purging in fevers, aſſerting at the ſame time that they tend to produce relapſe. Dr. Fordyce, ſpeaking on this ſubject, obſerves, that "ſuch evacuation (namely, purging) has never in any degree removed the fever, or prevented it from purſuing its ordinary courſe:" he has alſo ſeen, he ſays, "relapſes much more frequently take place when purgatives have been employed after a marked criſis, or after the diſeaſe has gradually ſubſided, than when purgatives have not been employed*." I am not diſpoſed to queſtion the accuracy of Dr. Fordyce's obſervation, as far as this goes; but his concluſion may be fairly ſuppoſed to be too general, ſince it is in oppoſition to the experience of others poſſeſſed of ſcarcely inferior means of judging.

I may repeat here, with regard to purgatives, what was formerly remarked of bloodletting as a remedy for fever;—that there are circumſtances of the diſeaſe under which they are not only ſafe, but effectual in carrying it off altogether: we have yet, however, much to learn upon the ſubject. They may be proper and efficacious at one period of the diſeaſe, and hurtful at another; and their uſe may be limited by a variety of circumſtances that are not yet fully underſtood. Still the general fact recurs, that they do occaſionally cure fever: nor do they ſeem more uncertain in this reſpect than in the cure of other inflammations.

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* *Third Diſſertation on Fever*, part 2, pp. 19 and 20.

## Sect. IV.---*Of Sudorifics in the Cure of Fever.*

IF fever conſiſt, as I have attempted to ſhew, in topical inflammation, we can eaſily underſtand why it ſhould yield ſo readily, in many caſes, to the employment of ſudorific remedies; ſince theſe are of the moſt approved uſe in the cure of inflammation generally. Sweating, in fact, has been employed with equal frequency and ſucceſs in both fever and inflammation.

The uſe of this deſcription of remedies would naturally have been ſuggeſted by the obſervation, which could not but have been made, that theſe diſeaſes, when left to themſelves, frequently terminate by ſpontaneous ſweating. Hence the idea, that ſomething noxious (the ſuppoſed cauſe of the diſeaſe) was carried out of the ſyſtem by this evacuation; and it would as readily occur to imitate, by art, this natural operation. In the milder forms of fever, ſweating artificially excited is often alone ſufficient to carry off the diſeaſe; and there is evidence enough to prove, that, in the treatment of the violent and malignant, it deſerves to rank among the moſt effectual remedies. "It ſtill remains true," ſays Dr. Cullen, "that certain fevers, produced by a very powerful *ſedative* contagion, have been generally treated, ſo far as we yet know, moſt ſucceſsfully by ſweating*."

In the peſtilential fever which followed the great plague in London, in the year 1666, Sydenham latterly truſted the cure almoſt wholly to ſudorific remedies; and with remarkable ſucceſs. He does not, indeed, ſpeak of this as abſolutely the beſt mode of practice; for he gave the preference to early and copious bloodletting. But as he was often oppoſed in this point by the prejudices of the people, and had found inſufficient bleeding rather injurious than beneficial, he was in ſome meaſure compelled to adopt a mode of cure that was upon the whole leſs ſucceſsful, but which he was permitted to carry to the requiſite extent.

Sweating for the cure of fevers has been excited by very various means. Every kind of ſtimulant, external and internal, heat, both dry and moiſt, diluents, *relaxants* as they are called, volatiles, ſpices, the eſſential oils, balſams, and reſins; opiates ſimply, or variouſly combined, have all at different times been employed for the purpoſe, and all of them with unqueſtionable ſucceſs. Some of theſe have been ſuppoſed to poſſeſs *ſpecific* properties in the cure of fever, and have been eſpecially complimented with the epithet *febrifuge;* ſuch are the *antimonial preparations*, which have ſcarcely ever been omitted in the treatment. But there appears to be little foundation for this.

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* Firſt Lines of the Practice of Phyſic, § clxvii.

The cure of fever by ſweating has a perfect analogy in other inflammations, which are found to yield in a large proportion to a ſimilar mode of treatment. In many topical inflammations, *after* bleeding has been had recourſe to, and in many, alſo, that do not admit of this evacuation, ſweating is a common and an effectual remedy. The reſtrictions proper to be obſerved with regard to it, are preciſely the ſame both in fever and inflammation; for when either of them is attended with much general vaſcular action, as pointed out by a full, hard, and ſtrong pulſe, ſudorific remedies can ſcarcely be employed with ſafety; at leaſt till the vigour of the ſyſtem has been in ſome degree reduced by previous bloodletting, abſtinence, or other means. But where the action of the heart and arteries is irritated, rather than increaſed in point of force;—where the pulſe is contracted, quick, and weak, and the general habit of the patient feeble;—neither in fever, nor in topical inflammation of other parts, is bloodletting properly indicated. In ſuch caſes, ſweating, with an appropriate regimen, forms our principal means of cure. We have here therefore another point of reſemblance between fever and inflammation, affording an additional argument of their common nature.

Although the efficacy of ſweating, as a remedy for fever, under certain circumſtances, reſts on much and deciſive evidence, the uſe of it has of late years been greatly neglected among practitioners, though it ſtill continues to be a favourite remedy with the public. This is to be accounted for in no other way, that I can perceive, than the following.

When the immediate cauſe of fever (as well as of moſt other diſeaſes) was ſuppoſed to reſide in the blood and humours of the body; and when it was obſerved that copious ſweats often immediately preceded its termination; it was natural to imagine, that the noxious cauſe was carried off by this evacuation. Hence, naturally, aroſe the employment of ſudorific remedies, to imitate the depuration which Nature ſeemed to dictate, and, on ſome occaſions, to complete what ſhe had left imperfect. This mode of treatment was often found to be ſucceſsful; and moſt ſo with thoſe who adopted it the earlieſt, and carried it to the greateſt extent.

But when more correct notions of the animal œconomy began to be entertained;—when it was perceived that the humoral pathology, and the doctrine of the *concoction* and expulſion of morbific matters, had no foundation in phyſiology, and were at variance with the known laws of animal life, the theory of the operation of ſudorifics was of courſe abandoned; and, along with it, the practice itſelf, though ſanctioned by the experience of ages, fell into diſrepute. This is what has happened on many other occaſions in medicine; to the no ſmall detriment of the art. Uſeful practices have often been diſcarded, becauſe they happened to be irreconcileable with the prevailing doctrines of the day.

It would ſeem not to be a matter of indifference, by what particular mode ſweating is excited for the cure of fever; and the want of attention to this has probably in ſome degree contributed to bring the practice into diſcredit. The ordinary mode of producing ſweat by the exhibition of ſtimulating medicines internally, is infallibly attended with the effect of increaſing the action of the heart and arteries, before the ſweating takes place; and where the ſweat does not readily come on, as is ſometimes the caſe, the increaſed action is communicated to the veſſels of the affected part, and the diſeaſe is thus often aggravated, inſtead of being relieved. This not unfrequently happens in ſtrong and vigorous habits.

Many, again, of the ſudorific remedies in common uſe, contain ſubſtances which exert a ſpecific action on the brain and its functions, and on this account might be termed *ſenſorial ſtimuli.* Such are *opium* and *narcotics* in general, and *alkohol* in its various forms; all of which manifeſtly excite the vaſcular ſyſtem of the brain, and, when carried to exceſs, produce the very diſeaſe in queſtion. Theſe are undoubtedly uſeful in certain ſtates and circumſtances of fever, but are as certainly prejudicial in others.

The moſt ſimple mode of exciting ſweat,

and the moſt free from the objections ſtated, appears to be by the application of external heat to the ſkin, by bathing or other ways. With proper management, it is probable that ſweating might be thus produced, without materially increaſing the action of the general ſanguiferous ſyſtem. Thus among rude nations, fevers are commonly treated ſuccefsfully by the vapour bath.

It may be remarked of the different evacuations above mentioned, as remedies for fever (and the fact is not difficult to be underſtood), that they mutually aſſiſt the operation of one another, ſo as to render each more effectual. Thus bloodletting, where it does not abſolutely cure, often makes other remedies more ſafe and efficacious. When, for example, the action of the heart and arteries is much increaſed, ſudorifics, which are generally of a heating and ſtimulating nature, are ſometimes detrimental. In ſuch caſes bloodletting is uſefully premiſed. So alſo, where emetics, given at the commencement of fever, fail to cut ſhort the diſeaſe, they are ſtill of conſiderable advantage as preparatory to ſweating, which they ſerve to render more full and efficient.

Sydenham ſays, that " it is found by

experience that purging, *after bleeding*, quells a fever ſooner and better than any other remedy whatever* ;" and again, in the following page, " for theſe reaſons, I can, I truſt, aſſert upon good grounds, that the above mentioned method of cure is more powerful than any other for the ſubduing fevers of moſt kinds."

Mr. Beane, an army ſurgeon, deſcribing the fever of Demerara, one of the Weſt India ſettlements, obſerves that bleeding, within twenty-four hours of the attack, or even after that time, relieved the headach immediately, and, *followed up by an active purge*, put a ſtop to the further progreſs of the diſeaſe†.

The indications of cure laid down by Dr. Jackſon in *contagious fever* (the fever of temperate climates), were, on the firſt day of the diſeaſe, to excite a new train of action, by *vomiting*, *purging*, and *ſweats*. If this was done, he ſays, within twelve hours from the commencement, the progreſs of the diſeaſe was either cut ſhort abruptly, or the threatened violence ſo much mitigated, that accidents ſeldom occurred*.

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* Pechey's Sydenham, p. 432.

† See Mem. of Med. Soc. of London, vol. 5, art. 35.

The good effects of the combined uſe of bloodletting and purging in the cure of fever in the Weſt Indies, are ſtrikingly diſplayed in the following narration by Mr. Downey, a navy ſurgeon. "The uſual conſequences of bleeding were," he ſays, "an abatement of the pain of the head, ſtomach, and loins. Though the pulſe had no great degree of hardneſs or fulneſs, and though the patient was often liable to faint on the loſs of four or five ounces of blood, yet theſe circumſtances did not in any caſe deter me from carrying on the evacuation, to twelve, ſixteen, or even twenty ounces, if the pain in the head was very violent. The evacuating medicine having operated briſkly, ſcarce any pain remained; but, in general, on the next morning, ſome giddineſs was complained of, which was relieved by another doſe of calomel and jalap, or ſalts: the ſame medicine was repeated on the third day, or on the fourth, if the patient was tolerably free from complaint on the third. In many, the diſeaſe required bleeding two or three days ſucceſſively, or

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[*] *Outlines of Fever*, chap. xi, ſect. 1.

even twice in the twenty-four hours, as the pain in the head or region of the ſtomach was more or leſs diſpoſed to give way; and the evacuations by ſtool were always kept up in proportion to the bleedings. In relapſes which occurred at the end of ſeven or ten days, or later, the ſame mode of treatment was uſed; and though it was not often neceſſary to carry it to the ſame extent as at firſt, yet the good effects were equally viſible*."

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* See Dr. Trotter's *Medicina Nautica*, vol. 2.

## Sect. V.---*Of the Effects of Epiſpaſtics in the Cure of Fever.*

IT had been frequently obſerved by phyſicians, that fevers ſubſided of themſelves upon the ſpontaneous appearance of inflammation in ſome external part of the body; hence it was natural to attempt bringing about the ſame end by artificial means. With this view, bliſters, and other means of exciting inflammation on the ſkin, were reſorted to, and often, as will be ſeen, with ſucceſs.

This claſs of remedies has been long in frequent uſe in the treatment of fever, in all its ſtages and varieties. The views, however, with which they have been employed are widely different, and ſometimes contradictory. At one time, they have been uſed as *evacuants* ſimply, for diminiſhing the quantity of the circulating maſs; at another, for the purpoſe of drawing off morbid humours, the alleged cauſe of the diſeaſe. While the mechanical doctrines prevailed, bliſters were applied as a means of reſolving and attenuating the ſuppoſed ſpiſſitude of the fluids, and thus removing obſtruction. By ſome they have been conſidered as general ſtimulants, ſerving to keep up the ſtrength of the ſyſtem under the debilitating influence of fever. Of late, however, they have been employed rather as palliatives, for the relief of particular ſymptoms, than as having any material influence on the regular courſe of the diſeaſe.

When we conſider the great and acknowledged efficacy of bliſters in the treatment of inflammation, wherever ſeated, we ſhall be at no loſs to underſtand their good effects in the caſe of fever, without recurring to any of the hypotheſes above alluded to. It is on the principle of *counter-irritation* alone, I apprehend, that their action can, in any caſe, be explained, agreeable to the law formerly laid down on this ſubject (*chap.* 1, § 24). Upon this ground, by relieving the primary morbid action going on in the brain, they often leſſen or remove delirium, abate head-ach, diminiſh ſtupor, and indirectly procure ſleep; and by theſe effects, moderate the moſt diſtreſſing ſymptoms of the diſeaſe. That bliſters are really productive of theſe advantages in the treatment of fever, we have the teſtimony of the beſt writers in proof.

“ The head-ach, which is a very diſtreſſing ſymptom in the beginning of fevers, is almoſt certainly relieved,” ſays Dr. Heberden, “ by a bliſter between the ſhoulders; and the ſame remedy equally relieves the inflammation in ſore throat, pleuriſies, and peripneumonies*.”

“ Bliſters,” ſays Dr. Home, “ appear of little uſe in *curing* the typhus; yet they are of the greateſt utility in relieving the ſevere head-ach, a troubleſome ſymptom which always attends it. Bliſters applied to the temples remove this ſymptom moſt ſucceſsfully, without producing *directly* any good effect on the fever, though they may *indirectly*, by removing one cauſe of watchfulneſs and weakneſs. To prove this by facts, would be to quote almoſt every low fever that has appeared in the clinical ward†.”

In a few inſtances, bliſters have not only had the effect of palliating the ſymptoms of fever, but have wholly and ſpeedily carried off the diſeaſe. Dr. Lind remarks, “ that in a moderate infectious fever, where the ſource of infection is not very violent, if twenty patients be bliſtered, ſixteen will next morning be entirely free from head-ach, heat, pain, and fever." And he obſerves, in another place, that in fevers ariſing on ſhip-board, from the crews being too much crowded together, " on the firſt appearance of the fever, and of the head being affected, the application of a bliſter almoſt certainly removes it*."

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* *Commentaries on the Hiſt. and Cure of Diſeaſes,* art. *Fever.*

† *Clinical Experiments,* &c. ſect. 2, p. 30.

Dr. Fordyce likewiſe remarks, that " he has ſeen, in ſeveral inſtances, inflammation, produced by applying ſtimulants to a part of the body, when a patient is affected with fever, carry off the fever entirely in the ſpace of twenty-four hours:" " yet," he adds, " it has but ſeldom this effect; it only commonly alleviates the diſeaſe, or takes off ſome of the ſymptoms; it ſometimes carries off head-ach, or diminiſhes it; it diminiſhes, rarely carries off, delirium, if it has ariſen; and ſo of the other appearances which take place in fever†."

But although bliſters have been found thus decidedly advantageous in the cure of fever, they have been very differently eſtimated by different practitioners. Some have employed them indiſcriminately, and to an extent proportionate to the violence and danger of the diſeaſe; while others have almoſt wholly rejected them. By ſome they have been employed chiefly in the early ſtages of fever; others have confined their uſe to the latter periods of the diſeaſe.

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* On Hot Climates, page 237.

† Third Diſſ. on Fever, part 2, p. 113, 114.

Dr. Heberden[*] conſiders bliſters to act as cordials in low fevers,—an idea that was alſo entertained by Huxham[†], and many others. Dr. Fordyce, on the contrary, denies that they keep up the ſtrength, or make any dormant power act; but ſays that by occaſioning greater frequency and ſmallneſs of the pulſe, and preventing ſleep, they rather weaken than give ſtrength, when employed towards the end of fevers[‡].

This contrariety of ſentiment upon a practical point is owing to the various and oppoſite views that have been entertained reſpecting the nature of fever, which have given riſe to the moſt contradictory indications. Upon the principle I have ventured to lay down, we have no difficulty in comprehending why bliſters ſhould ſometimes have the effect of taking off fever entirely, eſpecially when applied on or near the head;—nor why they ſhould relieve, where they do not entirely cure; ſince all this is in perfect analogy with the treatment of other inflammations.

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[*] *Loc. cit.*

[†] Quando ſolida torpent; circulatio langueſcit, ſpiritus ſunt effoeti, et comate corripitur æger, tunc veſicatoria ſunt adplicanda, et utilitatem præſtant eximiam, quocunque febris tempore talis ſymptomatum ſeries accedit.—T. 2, p. 115.

[‡] Third Diſſ. on Fever, part 1, p. 249.

The reſtrictions to which they are ſubject in fevers are juſt the ſame as on other occaſions. Where the general vaſcular ſyſtem is acting with unuſual violence, and where the irritability of the body is in exceſs, bliſters uniformly appear to be hurtful, both in caſes of fever and of inflammation. In different circumſtances, they are found eminently ſerviceable in both.

It is not at all known, whether any advantage ariſes from the uſe of *cantharides* for the purpoſe of exciting inflammation, in preference to the other *rubefacients*, as they are called;—nor whether they are more efficacious as applied to this or that part of the body—nor whether their repetition is likely to ſucceed, or to be uſeful, where the firſt application of them has failed. A great deal of obſervation is yet wanting to determine theſe, as well as many other points, regarding the treatment of fevers.

Cantharides excite topical inflammation in the urinary paſſages, which the other rubefacients do not. This effect may be beneficial, or otherwiſe, in reſpect to fever. It has been remarked that when, from the uſe of the cold regimen in fever, catarrhal inflammation has been induced, the primary diſeaſe has had its ſymptoms mitigated, and the danger apparently leſſened. I think I have more than once obſerved ſimilar advantage to accrue from the coming on of ſtrangury, after the application of a bliſter in fever.

## Sect. VI.—*Of Relaxants and Antiſpaſmodics in the Cure of Fever.*

UNDER the former denomination have been included a variety of drugs and applications, which probably operate in very different ways. The term itſelf is, indeed, objectionable, as being derived from an hypotheſis reſpecting the nature of fever that has no foundation in probability. There is no reaſon to believe *conſtriction* to make any eſſential part of the character of fever; and if *relaxants*, as they are called, have been found uſeful towards the cure, their good effects muſt be explained in another manner.

Among *relaxants* have been chiefly ranked antimonial preparations; certain emetic medicines in nauſeating doſes, as antimony and ipecacuanha; neutral ſalts, as nitre, the common *ſaline draught*, *Mindererus's ſpirit*, &c.; the warm bath; and fomentations to the extremities. It is difficult to eſtimate the value of theſe different applications as remedies for fever, a diſeaſe that has ſo ſtrong a tendency to terminate ſpontaneouſly in health. There is little doubt, however, that their merits have been over-rated. The good effects of many of them ſeem to be derived from the evacuations which they frequently produce, by ſweat, ſtool, or urine.

The uſe of *warm bathing* is of great antiquity, both in medicine, and as an article of luxury. *Hippocrates* repeatedly mentions it as applicable to the cure of acute diſeaſes; as do *Galen*, *Cælius Aurelianus*, and many others. Celſus alſo ſpeaks in its favour, but under certain limitations, and chiefly when applied in the intermiſſions of fever. In modern times, the practice has gone much into diſuſe in febrile diſeaſes, except among rude nations, who ſtill reſort to warm bathing or the vapour bath as a remedy in moſt of their acute diſorders.

When we conſider the large portion of the ſyſtem, the condition and actions of which are immediately altered by the application of the warm bath;—the change in the determination of the fluids that muſt accompany it;—and, moreover, the connection that ſubſiſts between the ſkin as an organ of ſenſe and the brain, we ſhall be prepared, even *à priori*, to expect conſiderable effects from the warm bath as a remedy for fever. In the *Exanthemata*, as in ſmall-pox, and in the fevers of infants, there is very deciſive evidence of its utility. It has been recommended alſo in the *yellow fever*, by a late reſpectable writer, Dr. Jackſon, alternately with the cold affuſion, which it ſeemed to render more efficacious. This practice was adopted by Dr. *M'Lean*, in the *St. Domingo* fever, and with the beſt effects*. It is needleſs to dwell on the utility of warm bathing in internal inflammations in general, ſince every day's experience evinces it; and there is abundant reaſon, from analogy, to expect advantage from it in the caſe of fever. Its preciſe value, however, in this reſpect, is yet undetermined.

The partial application of heat to the ſurface, as by fomentations to the extremities, is more familiar to practitioners. Theſe have not only occaſionally relieved particular ſymptoms, but have now and then brought the diſeaſe to a critical termination. "It ſometimes happens," ſays Dr. Fordyce, "that a moderate ſweat breaks forth, the patient falls aſleep, and is conſiderably relieved. The author has ſeen, in a few caſes (but very few in proportion to thoſe in which this practice has been employed), that a complete criſis has taken place, and the patient has been freed from the diſeaſe. In ſeveral caſes the patient has ſlept, and the delirium has been conſiderably relieved*."

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* *Inquiry into the Nature and Cauſes of the Mortality among the Troops in St. Domingo*, by Hector M'Lean, M.D. 1797.

It is highly probable that, in many ſtates of fever, warm fomentations to the head itſelf would be advantageous; upon the ſame grounds that they are found to relieve inflammation in the other cavities of the body—I ſpeak here from theory only: no obſervations, that I know of, have been yet made on the ſubject.

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ANTISPASMODICS, a term that, like *relaxants*, includes ſubſtances of very different natures, have likewiſe been much employed in fevers, from the time of *Hoffman* downwards; and on many occaſions, undoubtedly, with advantage. This claſs of medicines was firſt deſignated, and introduced into practice, upon a falſe theory; and hence their uſe has probably not been well underſtood; yet it certainly compriſes many of the moſt active and valuable articles of the *Materia Medica*, and which will come to be ſpoken of under the heads of *Simple Stimulants*, and Narcotics or *Senſorial Stimuli*. The efficacy of ſome of the moſt highly vaunted *antiſpaſmodics*, as *muſk* and *caſtor*, is at beſt but equivocal.

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* *Third Diſſ.*, part 2, p. 102.

## Sect. VII.—*Of the Uſe of Simple Stimulants in the Cure of Fever.*

ALMOST every variety of ſtimulant has been employed with great freedom in the treatment of fever; and, no doubt, occaſionally with advantage; though their preciſe value, and the particular circumſtances under which they are likely to be advantageous, or the contrary, are, I believe, very imperfectly underſtood.

The uſe of ſtimulating ſubſtances in fever is of very great antiquity, and has been continued, with more or leſs regularity, down to the preſent time. The ancients were in the habit of employing multifarious compounds of this deſcription; as the noted *Theriaca Andromachi*, the *Confectio Democratis*, and many others, which were looked on as antidotes to the virus that occaſioned peſtilential fevers, as well as to poiſons in general. That theſe compounds are capable of very uſeful application in the treatment of fever, no one will queſtion who has been at all accuſtomed to employ them;

nor will a ſubſtitute be found for them in any of the preparations in preſent uſe; a rage for ſimplifying, however, has almoſt diſcarded them from modern practice.

The *ſimple ſtimulants* in moſt frequent uſe at preſent, in caſes of fever, are the *ſerpentaria*, and *contrayerva;* various ſpices; and the *ammonia*, or volatile alkali.—Whether *camphor* is to be ranked with theſe, I can not determine. By ſome, camphor has been called a *ſtimulant*, by others a *ſedative:* but neither of theſe denominations ſufficiently expreſs its character. Its effect, of producing ſyncope, or an approach to the epileptic ſtate, when given in large doſes, as half a drachm or two ſcruples, would ſeem to refer it to the claſs of *Senſorial Stimuli*, to be hereafter mentioned.

Dr. *Wright* mentions, on the authority of Dr. *Drummond**, that in the moſt dangerous ſtages of the *yellow fever*, as it occurred in Jamaica, the *Cayenne pepper* was given in doſes of three grains, and repeated every two or three hours, till a generous warmth took place, which was kept up ſo long as the debility or vomiting laſted. Mercury was exhibited freely at the ſame time, ſo as if poſſible to affect the mouth. The ſame practice was reſorted to by Dr. *M'Lean*, in the *St. Domingo* fever. When the pulſe began to ſink, and the vital energies to diminiſh, he had recourſe to the warmeſt ſtimulants, ſuch as æther, brandy, *Cayenne pepper*, brandy baths, &c*.

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* See Med. Facts and Obſ., vol. 7.

In Dr. Duncan's *Medical Commentaries* for the year 1787, a letter is given from Mr. *James Stephens*, a medical practitioner of the iſland of *St. Chriſtopher*, in the Weſt Indies, mentioning the good effect of the *capſicum* in large doſes, in the *putrid* ulcerated ſore throat. He ſays he gave it to four hundred patients with the happieſt ſucceſs. A paper to the ſame purpoſe, by Mr. *Collins*, of the iſland of *St. Vincent's*, will be found in the ſecond volume of the *Medical Communications*. This gentleman made an infuſion of three table-ſpoonfuls of *Cayenne* pepper in half a pint of boiling water, adding to it, when cold, an equal quantity of vinegar. Of this, a table-ſpoonful was given, in ſome caſes, every half hour. He has known it given alſo, he obſerves, for the ſuppreſſion of the vomitings which occur in the *putrid* fever of the iſland: and alluſion is made to Dr. *Bancroft*, author of the *Hiſtory of Guiana*, who was accuſtomed to give this medicine, with the utmoſt ſucceſs, in the intermittent fevers of that colony.

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* M'Lean *On the Mortality among the Troops in St. Domingo*, 1797.

*Hillary*, in his Treatiſe on the Diſeaſes of Barbadoes, recommends the tincture of cantharides, in doſes of twenty drops twice a day, as a ſtimulant in typhus. This induced Dr. *Home* to give it a trial; and the reſult, as publiſhed in his *Clinical Hiſtories and Diſſections*, is much in its favour. He gave the medicine in larger doſes than *Hillary* recommends; viz. thirty drops thrice a day; and was fully convinced of its utility. It produced, he ſays, ſcarcely any ſenſible effects, except a ſenſation of heat in the ſtomach.

To this I may add, the vulgar practice of curing agues in this country, by pepper, brandy, and other active ſtimulants.—It is not my intention, in mentioning this practice, to recommend its indiſcriminate adoption, more than that of bloodletting, or any other of the means pointed out above. It is ſufficient for my purpoſe to have ſhewn that fevers have frequently been thus treated with ſucceſs.

This fact may, at firſt view, ſeem adverſe to the doctrine of fever being founded in inflammation; ſince it might be difficult to conceive, that an active topical affection ſhould admit of relief from ſuch treatment. We have, however, the analogy of many other inflammations in its ſupport. In certain ſtages of pulmonic inflammation, when the violence of arterial action has been reduced by previous evacuations; and in habits of body that appear unfavourable for loſs of blood; both the *volatile alkali* and the *ſeneka* (a highly acrid root) have been employed with equal freedom and ſucceſs: as have likewiſe a variety of other ſtimulating ſubſtances. The uſe of the moſt active remedies of this claſs in membranous inflammation, as in acute rheumatiſm, is too well known to need dwelling on.

The employment of ſtimulants in the later periods of inflammation, even of the active kind, is a very ancient practice, and quite independent of all theory. Celſus, in ſpeaking of the cure of ophthalmia, inſiſts particularly on this point. " Hæc enim (balneum ac vinum), ut in recentibus malis aliena ſunt, quia concitare ea poſſunt et accendere, ſic in veteribus, quæ nullis aliis auxiliis ceſſerunt, admodùm efficacia eſſe conſueverunt*."—It is hardly neceſſary to obſerve, that it is in the latter ſtages of fever that ſtimulants are chiefly indicated.

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* Lib. VII, cap. vi, art. 8.

## Sect. VIII.---*Of the Cinchona as a Remedy for Fever.*

OF the *Peruvian bark*, ſo uſeful on many occaſions in fever, the ſame contradictory ſentiments have been entertained as of moſt other of the active febrifuge medicines. In one age, it has been proſcribed altogether from practice; and in the ſucceeding one, perhaps, has been looked upon as a *panacea.* Morton adminiſtered it in almoſt every ſtage and variety of fever; or rather, to ſpeak more correctly, thought that he ſaw, in the character of almoſt every febrile diſorder, obſcure indications of the intermittent type, cloaked in the garb of continued fever; and he attacked it in conſequence with the *bark*, which he ſuppoſed to have the property of neutralizing or deſtroying the febrile acrimony or material cauſe of the diſeaſe*. Others, admitting equally a diſtempered ſtate of the fluids as the cauſe of fever, but denying the power of the bark to deſtroy it, have dreaded the uſe of this remedy, from a belief in its tendency to *lock up* the ſuppoſed noxious cauſe, and prevent its elimination from the body.

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* Mortoni *Pyretologia*, paſſim.

Even in our own times, practitioners have been found to differ very much in their eſtimate of the *Peruvian bark* as a remedy for fever. Some, conceiving the diſeaſe, or at leaſt certain varieties of it, to be founded eſſentially in debility, have adviſed the exhibition of the bark through the whole courſe of continued fever, as a ſtrengthening remedy; while others have confined its uſe entirely to the claſs of *Intermittents*. Some, again, have employed it as an *antiſeptic*, believing in a diſpoſition to putreſcency, as an eſſential character of ſome fevers. But it will be impoſſible to acquire juſt notions of the virtues and powers of this medicine, without diſcarding from our minds ſuch unſupported hypotheſes.

The medicinal powers of the cinchona are hardly to be deduced from either its ſenſible or chemical properties, nor from its effects in the healthy ſtate of the body. To the taſte, it is bitter and aſtringent; and it is ſaid alſo to be aromatic: but in theſe reſpects it is greatly ſurpaſſed by other articles of the *materia medica*, which yet have not the ſame efficacy in the cure of fevers. Nor have its properties been imitated by any artificial combination of theſe principles.

In the healthy ſtate of the body, the bark has little ſenſible operation. It ſometimes induces coſtiveneſs and ſometimes purging; but theſe effects are, in general, very tranſitory. If it produces any general effects in the ſyſtem, they are at moſt but inconſiderable. It has been called a *tonic* or ſtrengthening remedy: but if it has really any ſuch effect, it is by removing a cauſe of weakneſs, and not by any direct agency of this kind. Thus it often reſtrains preternatural evacuations, and allays or prevents febrile movements, and thus *indirectly* tends to increaſe the ſtrength of the ſyſtem.

The moſt ſtriking property of the cinchona, in a medicinal point of view, is its power of preventing the recurrence of febrile paroxyſms, when exhibited in the intervals of theſe. On this point, all are agreed. But ſome practitioners have gone farther, and have maintained that it is poſſeſſed of equal powers in the cure of continued fever, at leaſt of certain ſpecies, as the *low nervous* and *malignant* forms of fever.

An eminent phyſician, whoſe practice in

the *General Diſpenſary* furniſhed him with ample opportunities for obſervation, ſays, "I ſolemnly declare that I never ſaw one caſe of a nervous, putrid, or malignant fever, when the perſon could be brought to take this medicine in ſufficient quantity, which turned out unfortunately. As to the quantity, I muſt, however, remark that I never relied upon leſs than ſix or ſeven ounces in a dangerous caſe, given in little more than two days; but ſometimes three ounces was ſufficient. I muſt likewiſe add, that I never ſaw the higheſt doſe in theſe fevers diſagree with the ſtomach at the time, nor do any hurt afterwards." He allows, however, that the patient may ſeem worſe after taking it; "but this is a circumſtance," he adds, "which I have often met with, and learned to diſregard, from finding that the patient never died*."

A conſiderable number of years have elapſed ſince the publication of this opinion, and I know not how far the ſubſequent experience of the author has confirmed his ſanguine expectations from this remedy. But other practitioners have given nearly as favourable a report. His learned colleague in the *Diſpenſary*, Dr. Lettſom, who has great merit in having very early oppoſed the prevailing prejudices of the common people with regard to cool air in fevers, alſo gave bark very liberally, and was fully ſatisfied of its efficacy. It is proper to obſerve, however, that as the bark was commonly given at the ſame time that the cool regimen was ſtrictly enforced, and in caſes where the patients had been previouſly immured in cloſe and ill ventilated rooms, it is not eaſy to determine what portion of the benefit received was due to each. It is remarked beſides, that the bark, when given liberally, generally purged the patient; and we know that, when it produces this effect in intermittents, it rarely effects a cure*.

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* *Obſervations on Epidemic Diſeaſes:* by James Sims, M.D. 8vo, 1773, p. 273.

It is mentioned in the *Memoirs of the Society of Haerlem*, that Dr. *Verryſt*, a Dutch phyſician, gave bark in malignant fevers to the amount of nine or ten ounces during the three firſt days of the diſeaſe. And nearly an equal quantity has been lately recommended by Dr. *La Fuente*, a Spaniard, in the yellow fever at its commencement.

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* See *Memoirs of the General Diſpenſary*: by John Coakley Lettſom, M.D. *paſſim.*

On the other hand, many phyſicians of good obſervation and extenſive experience have condemned the bark, in general terms, in caſes of continued fever. Moſt practitioners in America at preſent, and, I believe, in the Weſt Indies alſo, conſider this medicine as injurious in the fevers of tropical climates, unleſs where there are diſtinct remiſſions to be obſerved, or the patient is already convaleſcent. Dr. Fordyce conſiders it as hurtful, rather than beneficial, in the ordinary continued fevers of this climate, though he admits that it has occaſionally proved ſucceſsful. I ſhall quote his words.

"The author," he ſays, "has ſeen many caſes in which it (the cinchona) has been employed in a regular continued fever, ſometimes with ſucceſs, but it has much oftener failed of ſucceſs. Where it has failed, the relaxations which began to take place in the diſeaſe have been much diminiſhed, the pulſe has become more frequent in the morning, the head-ach more conſiderable, the ſkin drier, the tongue covered with a thicker fur, the coſtiveneſs greater (if the patient was not thrown into a purging), the oppreſſion upon the præcordia greater, and likewiſe the difficulty of reſpiration increaſed. On the following evening the head has been alſo more affected; that is, the confuſion and delirium have been much more conſiderable, and the patient altogether worſe than he probably would have been if no remedy whatever had been exhibited; and there has been leſs chance of criſis in the fever, and it has been longer of being worn out*."

If ſuch be the true character of the bark in the treatment of continued fever, it ſeems, as Dr. Fordyce obſerves, to have a greater chance of doing miſchief than good. Dr. Heberden, with his uſual caution, ſays, reſpecting the uſe of the bark in theſe caſes, "I am not ſo ſure of its being uſeful, as I am of its being innocent, whether in decoction or powder†."

As it is evident, from all this, that there are circumſtances in continued fever in which the bark is capable of bringing the diſeaſe to a termination ſooner than would otherwiſe happen, it is of great importance to determine, if poſſible, what theſe circumſtances are. Poſſibly ſome light may be thrown upon the ſubject by conſidering it in the point of view in which I have endeavoured to place it. If fever be of the nature of inflammation, it is worth while to conſider the effects of the bark in the latter diſeaſe, in order to diſcover if any analogy exiſt between them in this reſpect.

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* *Third Diſſertation on Fever*, part ii, p. 148.

† *Commentaries*, art. Fever.

In inflammation of an active kind, occurring in vigorous habits, and in the early ſtage of it, experience ſeems ſufficiently to have proved that *bark* is an improper remedy. But when the diſeaſe ariſes in debilitated conſtitutions, or has gone on for ſome time without altering the ſtructure of the part, and when evacuations have been made proportioned to the activity of the diſeaſe and the vigour of the ſyſtem, bark is found to be really an uſeful application.

In eryſipelatous inflammation, occurring in large towns and in perſons of no great ſtrength, the Peruvian bark is found to be more ſucceſsful than an evacuant plan of cure. And it is probable that ſome fevers partake of the nature of eryſipelas, ſince they often mutually give riſe to one another, by what is called *metaſtaſis*. If bark can be uſed with impunity, and even with advantage, in ſuch a ſtate of the ſyſtem as occurs in acute rheumatiſm, as we learn from the writings of Morton, Fothergill, and Haygarth, and as later experience has very ſatisfactorily confirmed, there ſeems little reaſon to be apprehenſive of it in idiopathic fever, with ordinary precautions.

When inflammation aſſumes an *intermittent* or *remittent* type, as is not uncommonly the caſe, it is found to be as much under the dominion of the bark, as fever itſelf in ſimilar circumſtances. Thus when *hemicrania*, *ophthalmia*, *odontalgia*, &c. recur periodically, the power of the bark is nearly as effectual as in preventing the returns of an aguiſh paroxyſm. Dr. Heberden mentions that a diſpoſition to frequent catarrhal cough was removed in a perſon, and the diſeaſe prevented, by a long continued uſe of this remedy. Hence an additional proof is afforded of the analogy between fever and inflammation. Bark in all caſes ſeems to have a power of rendering the body leſs open to the impreſſion of morbific cauſes.

## Sect. IX.---*Of the Effects of Senſorial Stimuli in Fever.*

THERE is a claſs of medicines which affect, in a peculiar manner, the functions of the brain, or *ſenſorium*, and which have been called *narcotics*, *hypnotics*, or *anodynes*, with other appellations expreſſive of a ſtupefying quality, or the faculty of eaſing pain and inducing ſleep. By ſome they have been claſſed with *ſedatives (ſedantia***)*, in alluſion to a ſuppoſed property of allaying action; while others, particularly of late years, have looked upon them as in the higheſt degree *ſtimulant*, and capable of exciting, to the utmoſt, the living actions. This contradiction appears to be owing entirely to a narrow and partial view of the ſubject, which too often leads us to obſerve what falls in with our own ſpeculations, and to overlook or diſregard whatever is in oppoſition to them.

The principal *narcotics* enumerated by writers on the *materia medica*, are *opium*,

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* Cullen's *Materia Medica*, vol. 2, p. 217.

*cicuta*, *belladonna*, *hyoſciamus*, *ſtramonium*, *nicotiana*, *lauro-ceraſus*, the *black cherry*, the *bitter almond*, with many other fruit-kernels, which appear to contain an eſſential oil, altogether ſimilar in its properties to that of the laurel ; *camphor*, which, in large doſes, manifeſtly diſorders the functions of the brain, and which has been uſed with peculiar frequency in fevers, eſpecially of the malignant claſs ; *digitalis* ; the *tea-plant*, eſpecially *green tea*, which unqueſtionably belongs to this tribe ; *æther*, *wine*, and *alkohol*. There are probably many others that we are but little acquainted with, except as poiſons : I may mention, in particular, certain ſpecies of muſhroom, which excite the greateſt diſturbance in the functions of the ſenſorium, and in large doſes readily prove poiſonous. Certain gaſes alſo come under this head, as *carbonic acid*, the *nitrous oxide*[*], &c.

Theſe ſubſtances, conſidered as a claſs, are by no means properly deſignated by the terms *narcotic* or *anodyne* ; ſince ſome of them neither induce ſleep or ſtupor, nor have any direct tendency to relieve pain. This is the caſe eſpecially with one of the moſt powerful of them, the *lauro-ceraſus*[*]. The only circumſtance in which they ſeem to accord, is in their effect on the functions of the brain, which they all primarily diſturb, in greater or leſs degree; affecting the reſt of the ſyſtem in a ſecondary way only. This, in my opinion, forms a proper baſis for denominating them; and I have ventured accordingly to claſs them under the common name of *ſenſorial ſtimuli*, or medicines that operate ſpecifically on the brain or *common ſenſory*[†].

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[*] Cullen's *Materia Medica*, vol. 2, p. 217.

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[*] Cullen's *Materia Medica*, vol. 2, p. 284.

[†] The term *ſtimulus* may poſſibly be objected to in this place, as having been uſually applied to ſubſtances which increaſe the action of the general vaſcular ſyſtem, an effect which certainly does not belong to many of the narcotic tribe. It was formerly ſhewn, that all applications made to the body act *primarily* on ſome particular organ, and affect the reſt in a ſecondary way only, by ſympathy (chap. i, § 8). It would not be difficult to ſhew that, with reſpect to the general ſyſtem, there are no ſuch things as abſolute *ſtimulants* or *ſedatives;* that is, which, in all caſes, increaſe or diminiſh action. Their effects are always *relative*, and influenced by the degree in which they are applied, the ſtate of the body, and other circumſtances. Thus *alkohol*, which is reckoned one of the moſt powerful of the ſtimulant tribe, may, when applied in great exceſs, kill ſo ſuddenly as to leave no interval for increaſe of action in the general ſyſtem; and, on the other hand, *cold*, which has been always ranked with *ſedatives*, excites immediate action in the parts to which it is applied; as is evident by the contraction or corrugation which follows. In this reſpect, therefore, cold is a *ſtimulant* power.—Again; medicines are at one time *ſtimulant*, at another *ſedative*, ac-

But although theſe ſubſtances all agree in this reſpect, their operation on the ſyſtem generally, and even on the brain itſelf, is by no means uniform, but, on the contrary, greatly diverſified; ſo that no two of them produce effects preciſely ſimilar. Some appear to affect in a peculiar manner the mental powers, and proportionally little the other functions of the brain. This is the caſe with the poiſonous *muſhroom*, which induces a delirious hilarity, bordering on inſanity. And the ſame effect, in a ſtill greater degree, has been of late experienced from the inhalation into the lungs of the *nitrous oxide gas*.

*Opium* appears to have, of all, the greateſt tendency to induce ſleep; though many others have this effect in a greater or leſs degree. *Green tea*, on the contrary, is found to occaſion watchfulneſs.—Some ap-

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cording to the ſtate of health at the time. Thus *wine*, which, in health, quickens the pulſe and augments the animal heat, when given in caſes where the pulſe is already preternaturally quickened, and the heat of the body in exceſs, often brings back the pulſe to its natural ſtandard, and reduces the body to its proper temperature. This remark might be extended to a variety of other caſes. By the term *ſtimulus* I here only mean, any power capable of changing the condition or mode of acting in an organ. In this point of view, the term is, indeed, applicable to every medicinal agent.

pear to affect the organs of ſenſe more than others, while ſome diſturb in a particular manner the voluntary power; as *green tea*, which, in many perſons, occaſions tremor of the limbs.

Some *narcotics* are attended, in their operation, with increaſed action of the heart and arteries; as *alkohol*, and the various liquors that contain it: while others produce little of this effect.—Some again, as opium, induce torpor of the inteſtinal canal, and diminiſhed ſecretions; while the *cicuta*, and ſome others, have no ſuch effect, or even a contrary one.

Thus it appears that the effects of this claſs of ſubſtances are very various; and it is certain that they can ſeldom be ſubſtituted for one another in practice without diſadvantage. And not only do they differ widely from one another in their effects on the ſyſtem, but the operation of each is very different at different times, according to age, habit of body, doſe, uſe, and various other circumſtances. The proper adminiſtration of them in diſeaſe, therefore, is a matter of no ſmall difficulty, and calls for much both of experience and diſcrimination on the part of the practitioner. There is probably no claſs of medicines more abuſed in actual practice, nor, upon the whole, more unſucceſsfully employed.

The powerful action of the *ſenſorial ſtimuli* on the brain and its functions would ſeem to point them out as probable remedies for fever. In reality, the value of many of them in this reſpect is fully eſtabliſhed by experience. When, however, it is conſidered that their mode of acting has always hitherto been explained upon hypothetical principles, and that the indications which they have been employed to fulfil have been chiefly imaginary, it may be juſtly queſtioned whether their adminiſtration is in any caſe thoroughly underſtood.

Of all the *ſenſorial ſtimuli*, opium, perhaps, has been the longeſt and moſt frequently uſed in the cure of fever. In all ages, from the time that medicine has been practiſed as an art, and any records of it have been preſerved, we find that opium, in one form or another, has been a favourite remedy. The celebrated *theriaca* of Andromachus, the *diaſcordium*, and other ancient compounds, the formulæ of which have been handed down to us, owe much of their activity and remedial powers to this ingredient.

Opium evidently has a tendency to increaſe the vaſcular action of the brain, and in this way, probably, diſturbs its functions, and, through it, the reſt of the ſyſtem. This effect of opium takes place indifferently, whether the opium be applied to the brain itſelf topically; to the ſtomach; to the inteſtines by injection; or to the ſurface of the body. A conſiderable difference, however, exiſts in reſpect to the doſe, as applied in theſe different ways; for it is found to require three or four times the quantity that affects the ſtomach, in order to produce an equal effect through the rectum; and the ſkin is probably ſtill more inſenſible.

Opium, when taken in pretty conſiderable doſes, and eſpecially by perſons in high health, or who are labouring under inflammatory diſorders, produces, in general, diſtreſſing headachs, with throbbing of the arteries in the temples, fluſhing of the face, and ſuffuſion of the eyes; ſhewing very clearly an increaſe of vaſcular action in the head. Dr. Whytt aſſerts, from obſervation, that the veſſels of the membranes of the brain are found to be much diſtended in animals that have ſwallowed a large doſe of opium*.

When taken to the extent now mentioned, the functions of the brain become diſturbed. Stupor, or, ſometimes, watchfulneſs, takes place. The energy of the mind is impaired; the ſenſes are dulled; and the voluntary power is weakened:—theſe are the primary effects of opium in the ſyſtem. The ſecondary ones are, nauſea, or at leaſt loathing of food, torpor of the inteſtines, heat of ſkin, diminiſhed ſecretions, whence thirſt and foulneſs of the tongue—in a word, a train of ſymptoms that are hardly to be diſtinguiſhed from thoſe of fever generated by other cauſes; and indeed there is little doubt that proper fever may be actually thus produced.

More ſparingly taken, and in ſtates of the ſyſtem favourable to its operation, opium appears ſimply to excite the powers and actions of the brain, and, through this, ſubſequently, the reſt of the ſyſtem. Hence the mind is exhilarated, and the activity of the body and diſpoſition to motion are increaſed. As this ſtate, however, is a forced one, it cannot long be kept up, but, according to a general law of the ſyſtem, ſoon ends in fatigue and collapſe (to uſe a term that has often been employed in this ſenſe). The activity of the body declines, the ſpirits flag, and a ſtate of ſtupor or ſleep ſucceeds, under which the powers of the ſyſtem are recruited, and the effects of the medicine gradually diſappear.

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* *Whytt's* Works, 4to, p. 326.

Opium, therefore, is unqueſtionably a *ſtimulant* with regard to the brain, and increaſes its vaſcular action. This being granted, we can pretty well underſtand the circumſtances in which it is likely to be beneficial, or the reverſe, in fever.

The firſt ſtage of the diſeaſe is commonly a ſtate of active inflammation. The veſſels are at this time acting with conſiderable violence: hence the throbbing of the arteries, the diſtenſile pain and increaſed heat of the head, the want of ſleep, the fluſhing of the face, and the ſuffuſion of the eyes. In this ſtage of fever, as in other inflammations, experience has ſhewn opium to be uniformly hurtful. But after the firſt violence of action has ſubſided, and the diſeaſe has been protracted to a certain period, the ſame experience proves that ſtimulating remedies can be employed with ſafety and advantage: and in this ſtage it is that opium is found uſeful, both in fever and other inflammations.

It is not improbable, however, that in certain caſes of fever, particularly in previouſly debilitated habits, the inflammation is from the beginning of ſo inactive a kind, as to admit of the early uſe of ſtimulating remedies; which will account for the ſucceſs that many practitioners have experienced in the low ſtate of fever, from a tonic and ſtimulant plan of cure.

As want of ſleep is juſtly ranked among the moſt diſtreſſing ſymptoms of fever, ſo it is the one which practitioners have in general been moſt anxious to overcome; and it is with this view principally that opium has been adminiſtered. Its utility, however, in this reſpect is very queſtionable. It is ſeldom that ſound or refreſhing ſleep is thus produced; while the future progreſs of the diſeaſe is often rendered by it more unmanageable—to ſay nothing of its effect in ſuppreſſing the natural evacuations. When opium is ſo regulated as to induce ſweating (as by combining it with antimony, ſpices, and the like), theſe diſadvantageous effects are in a great meaſure obviated, and it becomes one of the moſt powerful means we poſſeſs for taking off fever, as well as other inflammations.—The adaptation of this remedy to the various ſtates of fever, the doſes and times of exhibition, will be particularly conſidered hereafter.

It was a favourite practice in the *Royal Infirmary* of Edinburgh, in the winter of 1802-3, to give every night three or four grains of hops in powder, as an *anodyne*, in typhus, inſtead of the uſual *hauſtus anodynus* of the Infirmary, which contained about twenty drops of the tincture of opium. According to the *Clinical Reports*, the hops ſeemed to merit the preference; the patient commonly paſſing a quieter night, with more refreſhing ſleep, than when he took the opium. The reaſon was, I have no doubt, that the opium often did poſitive harm; a charge from which the hops are certainly free, though it would be difficult to prove that they were productive of any direct advantage.—The other ſubſtitutes for opium that have been reſorted to, ſuch as *Hoffman's anodyne liquor*, *caſtor*, *muſk*, &c., ſcarcely merit notice.

WINE and ALKOHOL, which in their effects have a conſiderable analogy with opium, are ſtill more powerful than this, in increaſing the vaſcular action, both in the brain itſelf, and throughout the ſyſtem. Hence they appear peculiarly adapted to the latter periods of fever, when languor and torpor have ſucceeded to a previous ſtate of violent action : and in ſuch circumſtances they are undoubtedly uſeful.

It is thought by ſome, that in fever the excitability of the body is diminiſhed, ſo as to render it in a certain degree inſuſceptible of the action of ſtimulant remedies*. This idea, though by no means univerſally true, receives ſome countenance from the large quantities of wine that many practitioners have given to patients ill of fever, and, as they aſſert, with ſucceſs.

It would ſeem highly neceſſary, however, to diſtinguiſh between that univerſal proſtration of the powers and faculties of both mind and body (the effect of an apoplectic ſtate of the brain reſembling drunkenneſs, induced by the violent action of its veſſels) which is often obſerved in fevers of the worſt kind at the very commencement of the diſeaſe; and that exhauſted ſtate of the ſyſtem, the conſequence of previous increaſed exertion, which occurs towards the end of moſt fevers of any conſiderable duration.

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* " In typhus the body is leſs ſenſible to the action of opium and wine."—*Wilſon on Febrile Diſeaſes*, vol. i, p. 500.

In the latter caſe, the advantage of remedies of the kind we are now conſidering, is too well aſcertained to admit of a queſtion. But, in the former, common ſenſe ſeems to indicate that the uſe of highly ſtimulating remedies (provided any ſuſceptibility of impreſſion remains) muſt tend to aggravate the miſchief, by driving the blood with ſtill more violence upon the brain. And this is fully confirmed by experience: for it is in this ſtate of things that bloodletting and other active evacuations have been employed with ſuch decided efficacy, as already ſtated. That they ſhould have often failed, can not excite ſurprize, when it is conſidered how ſoon the delicate texture of the brain may be deſtroyed by an exceſs of its own vaſcular action.

Camphor, as already obſerved, has long been a favourite remedy in fevers, eſpecially thoſe of a malignant character. This predilection in its favour is probably the reſult of obſervation. Practitioners, however, are far from agreeing with regard to the general effects of camphor in the ſyſtem ; and hence it is not likely that its medicinal powers ſhould be well underſtood.

By ſome, camphor has been conſidered a *heating* or ſtimulant remedy ; by others, a *cooling* or ſedative one. It is probably one or the other according to circumſtances. It is acrid to the taſte, and leaves a ſenſe of heat in the mouth and fauces. It produces a ſimilar ſenſation of heat and burning in the ſtomach, or what is called *heart-burn.* When applied to a wound, it gives pain and inflames the wound ; and when rubbed on the ſkin, diſſolved in oil, it produces inflammation*. Theſe are ſurely ſtimulant effects.

On the other hand, when given to animals in large quantities, it has often produced ſudden death ; and, in doſes of one or two ſcruples to man, it operates by firſt inducing ſtupor, and afterwards delirium, furor, and convulſions†. Theſe effects, which Dr. Cullen conſiders as ‘ the ſtruggle that takes place between the force of its *ſedative* power and the re-action of the ſyſtem,' are, I maintain, evidences of its ſpecific action on the brain and its functions, and reduce it to the claſs of *ſenſorial ſtimuli*; in which view alone we can underſtand its operation, either generally, or as a remedy for fever.

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* It is denied by Dr. Cullen (*Mat. Med.*, ii, 298) that camphor has any ſuch effect on the ſkin; but this is undoubtedly a miſtake.

† Cullen's *Materia Medica*, part ii, chap. 6.

According to the obſervation of Hoffman, Cullen, and many other phyſicians of high authority, camphor has little or no tendency to increaſe the action of the ſanguiferous ſyſtem, nor to augment the heat of the ſkin. Combined with opium, however, in doſes of eight or ten grains with one of the latter, it is one of the moſt powerful ſudorifics we poſſeſs. In this way, the unpleaſant effects which opium of itſelf is apt to occaſion, ſeem often to be prevented. But it is proper to notice the remark of Dr. Cullen on this point, who ſays, that he has not found that a ſmall quantity of camphor has any effect in rendering the operation of opium different from what it would have been if employed alone.

Although the good effects of camphor, as a remedy in fever, are ſufficiently known in a general way, it is not yet aſcertained, I believe, under what particular circumſtances of the diſeaſe it is likely to be moſt ſerviceable, or the contrary. It has been moſt frequently employed in the malignant forms of fever, that is, in ſuch as are attended with marks of great debility or proſtration of ſtrength. But, on the other hand, it has been freely given by many practitioners in the moſt inflammatory diſorders, as in acute rheumatiſm; and, as is aſſerted, with ſucceſs. There is therefore a difficulty here, which further experience only can remove.

Dr. Home gave camphor, in doſes of five or ſix grains, in the low nervous fever, but, as he thought, without advantage: the pulſe continued to become quicker and quicker, till the patients died. The caſes, however, were ſuch as probably not to admit of relief from any remedy*. Dr. Heberden's teſtimony with regard to this medicine is not more favourable. He has known, he ſays, a ſcruple of it to be given every ſix hours, without having any perceivable effect in abating the convulſive catchings, or compoſing the patient to reſt.

It was remarked above of the *ſenſorial*

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* *Clinical Hiſt. and Diſſections*, p. 34.

*ſtimuli*, that though they all act ſpecifically on the brain, yet a conſiderable difference exiſts between them in the nature of that action. Some of them appear to affect particularly thoſe parts of the brain which are connected more immediately with the *vital* functions; others, the *animal*; and others, again, the *natural* functions. This is hinted at by Dr. Cullen in the following paſſage of his *Materia Medica*, though he does not purſue the idea.

"May it be ſuppoſed," he aſks, "that the animal and vital functions depend ſo much upon a different condition of the nervous ſyſtem, that one kind of poiſon may act upon one of theſe functions more readily than upon the other, while another kind of poiſon may act more directly upon that other ſet of functions, and leſs upon the former? If there is any foundation for the ſuppoſition, we might ſay that the narcotic poiſons act firſt upon the *animal* functions, though their power may, at length, be extended alſo to the *vital*; and that the *lauro-ceraſus*, and other poiſons analogous to this, act more immediately upon the *vital* functions without ſhewing any intermediate affection of the *animal*[*]."

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[*] *Treatiſe on the Mat. Med.*, part ii, p. 284.

If, as here ſuggeſted, the *lauro-ceraſus* manifeſts its effects particularly upon the vaſcular ſyſtem, and eſpecially if theſe effects are of a debilitating kind, it would ſeem peculiarly adapted to the ſtate of fever, which, as I have endeavoured to ſhew, conſiſts in exceſſive vaſcular action in the brain. But this is at preſent little more than ſpeculation, which experience muſt ultimately verify or overturn. It is worth obſerving, however, that the *lauro-ceraſus* has actually been employed with ſucceſs in the cure of fever. Dr. *Brown Langriſh* remarks, that it was in frequent uſe in his neighbourhood for the cure of agues. And *Bergius* frequently preſcribed a ſtrong emulſion of bitter almonds (which, as is well known, produces effects ſimilar to the laurel) with decided advantage in intermittents.

But there is another of the *ſenſorial ſtimuli*, the effects of which in diminiſhing vaſcular action (as well as analogy) point it out as a proper remedy for fever: I mean the *digitalis*, the power of which in reducing the force and frequency of the pulſe is ſufficiently aſcertained. It is not enough, however, that this medicine is capable of diminiſhing the general vaſcular action, in order to eſtabliſh its character in the cure of fever; for ſuch an effect might poſſibly be the conſequence of a previous change induced by it on the *ſenſorium*, a change which might in itſelf be unfavourable to the diſeaſe. We know that preternatural ſlowneſs of the pulſe is one of the ſigns of injured brain. And the ſame ſymptom is occaſionally obſerved in fevers of the worſt kind, and from the ſame cauſe. The value of digitalis, therefore, as a febrifuge, can only be determined by a knowledge of its effects on the brain itſelf, or by an appeal to experience.

It ſeems to be generally imagined, that the digitalis acts ſimply and primarily on the heart itſelf, diminiſhing its power and activity. But this I believe to be quite unfounded. I have never ſeen the frequency of the pulſe much reduced by this medicine, without obſerving at the ſame time a manifeſt diſorder of the functions of the brain. Nor is the pulſe ſimply rendered ſlower by digitalis, but is always made more or leſs irregular by it. The pulſations are ſometimes found to be pretty equal for ten or a dozen ſtrokes, and then hurried and irregular; ſo that the pulſe beats at the rate of fifty, and immediately afterwards at eighty or ninety, in a minute. The ſlighteſt motion of the body, as merely riſing from a chair, and even a deep inſpiration, or the act of coughing, is ſufficient to raiſe it twenty or thirty ſtrokes in a minute.

Further, it is not always in our power to reduce the frequency of the pulſe by means of digitalis, by any management of it. It will occaſionally produce dimneſs of ſight, vertigo, nauſea and vomiting, to ſuch a degree as to compel the laying it aſide, without having in any degree reduced the quickneſs of the pulſe, and ſometimes even with the effect of rendering it more frequent than before.

*Digitalis*, then, muſt rank with the *ſenſorial ſtimuli.* Like the reſt of theſe, it acts primarily on the brain, and through this on the vaſcular ſyſtem. In order, therefore, to eſtimate its value, *à priori*, as a remedy for fever, we muſt endeavour to aſcertain its effects on the vaſcular action of the brain itſelf, for on this muſt its influence be finally exerted, in order to overcome an inflammatory ſtate of this organ.

I have watched narrowly and repeatedly the effects of digitalis, when it has been carried the length of inducing reſtleſſneſs, vertigo, and impaired viſion, without having obſerved that throbbing of the arteries, tenſive pain of the head, and fluſhing of the face, which occur from the exceſſive uſe of opium and alkohol, and which denote an increaſe of vaſcular action in the brain. On the contrary, the face in ſuch caſes is pale, the eyes are ſunk and languid, and headach, which was before troubleſome, has often ceaſed.

This, I admit, is only a probable indication of the actual ſtate of the ultimate branches of the arterial ſyſtem, which appear to be the immediate ſeat of inflammation; for it is certainly poſſible that the extreme veſſels may be ſo acting, as to deſtroy the texture of the part, without any remarkable increaſe in the action of the larger arterial trunks. And in this way, I conceive, parts are frequently diſorganized by chronic inflammation. But, at all events, the effects of digitalis are conſiderably different from thoſe of wine and opium; and it is probably, therefore, adapted to circumſtances of the diſeaſe, where theſe would be leſs proper.

On all accounts, I think digitalis entitled to the notice of phyſicians, as a remedy for fever, whether we conſider its general effects in the ſyſtem, or its efficacy in the cure of various inflammations. I have myſelf employed it in ſeveral caſes of typhus, and am ſatisfied of its utility. I have alſo uſed it with apparent advantage in many caſes of the *acute hydrocephalus*, the fever of infants. A few months ago, Dr. *Thornton* communicated to the *Medical Society* ſome ſtriking inſtances of its efficacy in *ſcarlet fever.*

The fate of this plant has been very ſimilar to that of many other active remedies, which, after going into diſuſe for many years, have been again revived in practice. The digitalis, we are informed by the old writers on the *materia medica*, uſed formerly to be a domeſtic medicine in the country in pectoral diſorders. *Ray* ſays, the common people in Somerſetſhire employed a decoction of it in fevers, and that it operated both upwards and downwards*. It has alſo been celebrated in epilepſy, a diſeaſe which, in its ſeat and origin, has a near relation to fever, of which it is both a frequent precurſor and conſequence.

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* " Somerſeti Angliæ ruſtica turba hujus decocto febricitantibus purgationes et interdum ſuperpurgationes et vomitiones humidioribus alvo molitur."—*Raii* Hiſtoria Plantarum, *art.* Digitalis.

There are ſtill others of the *ſenſorial agents*, which, by their property of reducing the vaſcular action throughout the body, and even in the brain itſelf (as is evident by the paleneſs and faintneſs that attend their operation), promiſe to be valuable auxiliaries in the cure of fevers, eſpecially ſuch as are attended with marks of ſtrong vaſcular action in the brain: ſuch is the *nicotiana*, which, in a full doſe, enfeebles, even more than the foxglove, the action of the heart and arteries. In hot climates, where the progreſs of fever is ſo rapid and deſtructive, ſuch herculean remedies are fully juſtified. Where ſo little time is allowed for the operation of medicine, the moſt powerful agents ſhould be had recourſe to; and none ſeems better entitled to notice in this reſpect, both by the celerity and the force of its action, than the *nicotiana*. In an *inaugural Diſſertation* publiſhed at *Philadelphia*, in the year 1804, by Mr. *Stubbins Firth*, Houſe Surgeon to the *Philadelphia Infirmary*, frequent clyſters of the infuſion of tobacco are recommended in *yellow fever*; and the author ſays that he never knew it fail.

Among the minor remedies for fever, derived from the claſs of *Senſorial Stimuli*, the agreeable effects of *green tea* ought not to be wholly overlooked. The tendency of this to relieve the headach and other conſequences of inebriety, are well known. And the ſtupor of fever, which, as we have ſeen, is nearly allied to intoxication, might admit of relief from the ſame means. Habit, it is true, has ſo reconciled moſt of us to the ſtimulus of tea, as to render it in a great meaſure inert: but this, probably, might be compenſated by an augmentation of the doſe.

I might have mentioned among *Senſorial Stimuli* MENTAL EMOTIONS, but that they are ſcarcely applicable to practical purpoſes. The influence which they occaſionally exert in fever is, indeed, ſufficiently known. Terror has often prevented the recurrence of the paroxyſms of intermittents: in continued fevers, it has been ſuppoſed to be detrimental. I know not whether a fact mentioned by Dr. Jackſon, reſpecting the good effects of geſtation in the open air in fevers, during a ſevere ſeaſon in America, is to be referred to this head of *mental emotions;* or whether the effects of temperature and pure air are not to be taken likewiſe into account.

In ſupport of the former idea may be mentioned the good effect of endeavouring to rouſe the attention of perſons ſtupefied by large quantities of opium and the like, and not ſuffering them to yield to the almoſt invincible propenſity to ſleep that takes place. Dr. Hartley gave *nux vomica* to a dog, and then beat him ſeverely. The ſenſation thus excited, and probably alſo the effect of fear on the mind of the animal, prevented the operation of the drug, and no diſorder enſued. Dr. Darwin relates a ſomewhat ſimilar caſe. Two dyſenteric patients in the ſame ward of the Infirmary at Edinburgh, quarrelled, and whipped each other ſeverely with horſe-whips: and it was obſerved, that both of them were much better of the dyſentery afterwards. Such an application would probably be at leaſt as innocent and a much quicker means of exciting a patient in the ſtupor of fever (if excitement were neceſſary) than *bliſtering*, which is often carried to ſuch an unmerciful extent.

It may be remarked of many of the *ſenſorial ſtimuli* above enumerated as remedies for fever, that they are alſo, under certain management, capable of exciting the diſeaſe; becoming either a cauſe or a cure, according to their adminiſtration. Thus we have ſeen that mental emotions are ſometimes the cauſe of intermittents, while the ſame ſtimulus has repeatedly removed them*. Cold, which, as far as regards ſenſation, is perhaps to be ranked with *ſenſorial agents*, frequently induces fever, and is among the moſt powerful of its remedies.

The exhalations of the *datura ſtramonium* (thorn-apple) occaſion headach, with febrile ſymptoms; and in ſome parts of America, where this plant grows in great abundance, the occurrence of the *remittent fever* is aſcribed to that ſource. This opinion is ſo prevalent, that a law has been paſſed in one of the ſtates, for extirpating the plant altogether†. Such an opinion does not appear without foundation, nor exceedingly improbable, when the effects of this drug are conſidered as taken into the ſtomach. A few grains of the powdered leaves of the ſtramonium excite headach, ſtupor, convulſions, and ſometimes mania. A ſingle drop of a weak infuſion of it‡, put into the eye, is ſufficient to dilate the pupil in the ſpace of an hour or two, to ſuch a degree as almoſt to obliterate the iris, attended with a ſenſe of heat and pain in the head, and a degree of ſtupor that laſts for many hours: as I know by trials on myſelf and others.

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* See page 88.

† See a *Collection of American Medical Theſes for the Year* 1805, by Dr. Charles Caldwell, of *Philadelphia*.

‡ Two ſcruples to half an ounce of water.

The opinion is rendered further probable from the effects of *alkohol*, which is known to be capable of exciting fever of the moſt violent kind. Dr. Cooper, of Philadelphia, in an *Inaugural Diſſertation* on the *Stramonium*, remarks that he ſaw a caſe of true *yellow* fever induced in a perſon ſomewhat depreſſed in his mind, who, for ſeveral days, had taken nothing except repeated large quantities of wine and brandy*.

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* Caldwell's *Collection of Theſes.*

## Sect. X.---*Of Cold as a Remedy for Fever.*

WE are next to conſider one of the moſt powerful, but at the ſame time, perhaps, the leaſt underſtood, of the agents employed in the cure of fever. Although it be true, in a *phyſical* ſenſe, that *cold* is merely a negative term, implying only a privation or diminution of heat, it cannot be viewed in this light as applied to the living body, but muſt be conſidered as a poſitive agent, having, like other agents, a power of changing materially the condition and actions of the ſyſtem. Its effects are by no means a lower degree of thoſe which heat produces, but of a totally different kind.

The effects of *cold* on the ſyſtem are various, according to the mode of its adminiſtration, time, degree, and other circumſtances. The diſcuſſion that has taken place, and been carried to ſuch an unprofitable length, with regard to the queſtion of its *ſtimulant* or *ſedative* operation, appears to me to have been wholly uſeleſs; ſince it acts ſo very differently in the different circumſtances above alluded to, that nothing but obſervation can bring us acquainted with its true powers. I propoſe, in the firſt place, to conſider its effects in the ſtate of health, both as regards the part to which it is immediately applied, and the general ſyſtem; and afterwards its effects as a remedy for inflammation. This will lead us, if I miſtake not, to underſtand, in ſome meaſure, its influence on the courſe of fever.

Cold affects both the ſenſibility and irritability of the body; in other words, it excites both ſenſation and action. There are ſome parts, however, which appear to be in a great meaſure inſenſible to its impreſſion; whether from habit or original conſtitution, I know not. Thus, cold air is not felt in the lungs in breathing, though it may act on them in other reſpects ſo forcibly as to excite diſeaſe; but its firſt impreſſion is unattended with the ſenſation of cold. And the internal cavities in general have a very indiſtinct, if any, feeling with regard to this agent.

The effects of *cold* in exciting ſenſation in a part, are according to the intenſity of the application, the novelty of it, and the natural ſenſibility of the part. Like other agents on this function, its effects are diminiſhed by repetition and habit. Thus the face, by repeated expoſure, becomes inſenſible to degrees of cold that, when applied to other parts, excite a high degree of ſenſation, amounting even to pain.

But *cold*, as before obſerved, not only influences the ſenſibility of parts, but their moving powers likewiſe. It not only produces a condenſation, or ſimple diminution of bulk, as in inanimate bodies; but occaſions contraction, the reſult of living action. This is very evident in the ſkin, which, when corrugated by cold, has a totally different appearance from the cold or frozen ſurface of the dead body.

The effect of this contraction, when conſiderable, is to diminiſh the vaſcular action of the part, and to impede the paſſage of the blood through the veſſels. Hence its effects in ſuſpending, and often ſtopping altogether, the proceſs of inflammation, which conſiſts in a great meaſure, if not wholly, in a preternaturally violent vaſcular action and its conſequences.

Such are the firſt and moſt obvious changes induced by *cold* on the parts to which it is immediately applied. Its ſecondary, and, on this occaſion, moſt important, effects on the general ſyſtem, remain to be conſidered.

As exciting ſenſation, *cold* is undoubtedly to be ranked with *ſenſorial ſtimuli*, like which it is capable of influencing very powerfully the ſenſorium, and through it the reſt of the ſyſtem. The effect exerted by it on the brain, is in a compound ratio of the intenſity of the application, the ſenſibility of the part to which it is applied, and the ſuſceptibility to impreſſion of the brain itſelf: hence, as the ſuſceptibility differs in different perſons, the effect of an equal application of cold is not the ſame in any two individuals.

When *cold* is applied in a low degree to the ſurface of the healthy body, ſo as to be within the limits of pleaſurable ſenſation, it appears to excite the energy of the brain, and ſubſequently to invigorate the whole ſyſtem. Hence the grateful and refreſhing effects of the ſummer breeze. Applied in a higher degree, it produces pain or a ſenſation of uneaſineſs in the part, and, at the ſame time, diminiſhes the energy of the brain. This is manifeſt in the debility of the voluntary muſcles, which tremble and can ſcarcely be made to obey the will; and in the general torpor of the body, which, under a more intenſe application of the cauſe, terminates at length in a ſtate of total inſenſibility.

The change thus induced on the brain appears to conſiſt in, or is accompanied by, a diminiſhed action of its veſſels; as is rendered probable by the paleneſs of the face and ſhrinking of the features which attend the ſenſation of extreme cold.

This torpid ſtate of the brain is ſometimes ſucceeded by inflammation ariſing in it; juſt as happens to external parts, after having been expoſed to a diminiſhed temperature. A diſeaſe then takes place which has been called either *fever* or *phrenitis*, according as one ſet of ſenſorial functions, or another, is obſerved to be peculiarly affected.

When the mental powers are moſt ſtrikingly and primarily diſturbed, the affection has been named *phrenitis*, or ſimply inflammation of the brain. Where the affection of the mind or delirium is later in coming on, and the voluntary power is much weakened, it has been uſually called *fever*, in which the inflammation of the brain, from the abſence of the moſt acute ſymptoms, has been overlooked. And, when both mind and body are obſerved to be pretty equally diſordered, the diſeaſe has received the compound denomination of *brain-fever*. But all this, it is evident, is entirely arbitrary.

There is a third and more remote ſeries of changes induced in the ſyſtem by the application of cold, which are to be aſcribed to the previous change induced on the brain, upon which they immediately depend. Theſe are a diminiſhed action of the heart and arteries, as ſhewn in the ſmallneſs and feebleneſs of the pulſe, and a derangement of other organs, according to their diſpoſition to be thrown into irregular action.

Theſe effects of cold on the brain and general vaſcular ſyſtem, take place to whatever part of the ſurface the application be made; but more ſo in proportion as the part is leſs accuſtomed to it. Habit ſo far reconciles us to the impreſſion of this ſtimulus, that a degree of cold which, when applied to the face, ſcarcely excites ſenſation, produces its full effect applied to parts that are uſually defended from it.

This ſeems to render it doubtful, whether the common idea is well founded, that cold applied to the head itſelf is more effectual in reſtraining immoderate action in the veſſels of the brain, than when applied to more diſtant, though more ſenſible, parts. The ſcalp is (from habit) one of the moſt inſenſible parts of the body, with regard to the impreſſion of cold : while we know that the full operation of this agent on the brain can be produced by its application to remote parts of the ſyſtem.

A conſiderable difference is obſerved in the effects of cold, according as its application is ſudden and intenſe, or more moderate and long continued. In the former caſe the effect is greater, but at the ſame time is commonly tranſitory ; and very often the parts whoſe actions were ſuppreſſed or diminiſhed while under the influence of the cold, act afterwards with greater energy than before. This is what is called the *re-action* of the ſyſtem, and takes place equally with regard to the three ſeries of actions before mentioned ; which ſeems to ſhew that the primary change induced in each caſe is the ſame, viz., a diminution of vaſcular action. Thus the paleneſs and ſhrinking of the ſurface,—the diminiſhed energy of the functions of the brain,—and the reduced action of the heart and arteries, which follow the temporary application of the cold bath, are ſucceeded by an unuſual glow on the ſurface, increaſed muſcular vigour, and a ſtrong and full pulſe.

When cold is applied in this ſudden and tranſitory way to parts already in a ſtate of inflammation, the re-action which ſucceeds to the previous ſtate of torpor ſometimes aggravates the diſeaſe; as in the caſe of burns, which are relieved from pain by a temporary application of cold, but if this be ſoon withdrawn, the pain returns with greater violence than before. And in order to produce permanent benefit in this caſe, the application of cold muſt be continued till the diſpoſition to increaſed action afterwards ceaſes; an effect which, in the caſe of burns, often requires a period of many hours to accompliſh.

We are now, I flatter myſelf, prepared in ſome meaſure to comprehend and eſtimate the value of cold as a remedy for fever, a remedy concerning which, and its mode of acting, many doubts and diſagreements among practitioners ſtill ſubſiſt. I ſhall not enter further into the hiſtory of the ſubject, than to obſerve, that the practice is of great antiquity, though modern writers have contended for the honour of the diſcovery.

Cold has been employed in two very different ways, in the cure of fever; the one, its ſudden but temporary application, as by the cold bath or the affuſion of cold water over the body;—the other, the gradual and long-continued expoſure of the patient to cool air, the waſhing the ſurface of the body or limbs with cold or tepid liquids, and the exhibition of cool drinks.

In the former way, it ſeems to act by its ſudden impulſe, and not by the mere abſtraction of heat from the body, as Dr. Currie ſeems to have ſuppoſed. In this reſpect, it ranks with emetics, mental emotions, and other ſudden and violent impreſſions, which are found occaſionally to interrupt the progreſs of fever, and many other diſeaſes. The effect of the application in this caſe is almoſt immediate. The diſeaſe has been often thus cut ſhort at once. A diſpoſition to ſleep and ſweating has ſucceeded, and the patient has awoke almoſt free from diſeaſe.

By the other mode of applying cold in fever, viz., by expoſure to cool air, the uſe of cold drinks, and ſpunging the ſurface with cold or tepid liquids, the preternatural heat of the body is gradually abſtracted, and thus the moſt prominent ſymptom is relieved. But it is not by the ſimple abſtraction of heat from the body that this mode of cure produces its good effects in fever; but by the reduction of vaſcular action; firſt in the ſkin; ſecondly in the brain, by ſympathy; and, laſtly, in the general ſyſtem. Thus the action is deſtroyed upon which the exceſs of heat (which is merely a ſymptom) depends.

It has been for many years a practice with Dr. Gregory, the preſent eminent Profeſſor of the Practice of Phyſic in Edinburgh, in addition to the expoſure of the patient to cool air in typhus, to direct the whole body to be waſhed with a ſponge dipped in cold vinegar and water; with the effect of reducing the pulſe, in many caſes, from 110 to 90 ſtrokes in a minute. This fact is not difficult to be underſtood, when it is conſidered that the ſkin is an organ of ſenſe, and therefore intimately aſſociated with the brain; and that by inducing torpor in the one we diminiſh the energy of the other, and, ſubſequently, the irritated vaſcular action of the whole ſyſtem.

With regard to the comparative merits of the two modes mentioned of applying cold in fever, we muſt appeal to experience. The affuſion of cold water, or the cold bath, ſo ſtrongly inculcated of late by Dr. Currie, in his valuable publication on the ſubject*, has ſo often ſucceeded in immediately arreſting the progreſs of fever, as proved by his own experience as well as that of many other unprejudiced obſervers, that the practice appears to merit more attention than it has yet received.

It is to be obſerved, however, that neither this, nor any of the other remedies employed in the cure of fever, effects its purpoſe with certainty; and it conſequently becomes a queſtion of no ſmall moment to determine, whether in caſe of failure the patient is put into a worſe ſituation with regard to the future progreſs of the diſeaſe, than if no attempt had been made to cut it ſhort. This point, I think, we have ſcarcely yet grounds for determining ſatisfactorily.

If we rely implicitly upon the reports which have been hitherto made on the ſubject, we muſt believe that the practice, even where unſucceſsful, is never attended with diſadvantage, but is rather favourable to the ſubſequent progreſs of the diſeaſe. Experience, however, has taught us to make ſome allowance for reports of this deſcription. The diſcoverers of new remedies, or the advocates of revived modes of practice, have rarely ſhewn themſelves competent to fix the proper limits to their application. And we have yet had the experience of few others with regard to the point before us.

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* *Reports on the Effects of Water, cold and warm, in the Treatment of Fevers:* by William Currie, *M.D.*

I have ſeen the cold affuſion in typhus, and even ſponging the ſurface of the body with vinegar and water, excite, in different inſtances, pulmonic inflammation and rheumatiſm: but I have not obſerved that the ſituation of the patient was rendered materially worſe by the combination. It is even probable, that ſuch a combination may, by counter-irritation, tend in ſome caſes to relieve the primary affection. "One circumſtance not a little remarkable was," ſays Dr. Sims, "that ſome of thoſe who were expoſed to cold (in fever) were ſeized by an immediate cough from it: this I always found a certain ſign of a ſpeedy recovery. The ſame thing I have often noticed towards the end of other fevers, when I did not with certainty know the cauſe, and cannot recollect a ſingle inſtance of the diſorder afterwards terminating fatally*."

I have not in any caſe obſerved the ſecondary diſeaſe thus induced, occaſion an entire ceſſation of the fever. The two affections have gone on together, evidently modifying each other. Thus there have been the uſual pulmonic ſymptoms of cough, pain, and difficult reſpiration, with the ſymptoms peculiar to idiopathic fever, as head-ach, proſtration of ſtrength, and a brown furred tongue. When rheumatiſm ſupervened on fever, the diſturbance in the functions of the brain peculiar to the latter, continued; but the general vaſcular ſyſtem was at the ſame time excited into a degree of action unlike what is ordinarily obſerved in low fever, and approaching to that which accompanies acute rheumatiſm.

Theſe combinations of diſeaſe I had an opportunity of witneſſing in the Royal Infirmary at Glaſgow in the winter of 1803, where they occurred ſo frequently as to have brought the practice of cold affuſion into ſome degree of diſrepute. It is not improbable indeed, from analogy, that other combinations of diſeaſe, more formidable than thoſe now mentioned, as inflammation of the abdominal viſcera, may be occaſionally produced by this practice.

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* *Op. cit.*

Occurrences of the kind above alluded to, and the fear (perhaps ill-grounded) of others ſtill more formidable, have concurred with the natural prejudices of mankind to prevent ſo general an adoption of the cold affuſion in the treatment of fever, as the reſpectable teſtimony adduced in its favour would ſeem to warrant. Practitioners in general ſtill prefer truſting the cure of fever to remedies that are leſs revolting to vulgar opinion. This may be juſtifiable with regard to the fevers of temperate climates, where the riſk to life is comparatively ſmall; but in thoſe of the torrid zone, which ſo ſoon terminate in diſorganization and death, the uſe of means capable of arreſting their progreſs (though eventually attended with ſome degree of hazard and uncertainty) is fully juſtified.

The probability of ſucceſs from the cold affuſion in fever, depends almoſt entirely on its early adminiſtration. It rarely ſucceeds after the diſeaſe is fully formed, or has already ſubſiſted for ſeveral days. This is an additional reaſon for believing that it effects its purpoſe by *counter-irritation*, or the ſhock that is given to the ſyſtem, and not ſimply by reducing the exceſſive temperature of the body.

With regard to the more moderate and continued application of cold as a remedy for fever, it would be ſuperfluous to adduce proofs of its utility. And its mode of acting, after what has been already ſaid, cannot, I think, be obſcure. If fever depend upon inflammatory action in the veſſels of the brain, the application of cold to the ſurface of the body is a certain means of leſſening ſuch increaſed action, and of relieving, in conſequence, the different ſymptoms which reſult from it. And though it be not capable of ſuddenly interrupting the progreſs of the diſeaſe, there is no doubt that, by moderating the violence of the local morbid action going on in the brain, it checks the tendency to diſorganization in the part, and conduces in no ſmall degree to a favourable termination.

One effect of the application of cold to the ſurface of the body, is a change in the general diſtribution of the blood; the cold acting as a repellent. To this, much of its effect in the cure of diſeaſe has been aſcribed. Hence fears have been commonly entertained, of *cold* throwing the blood with injurious violence upon the brain; ſo that while the propriety of cold applications to the head itſelf, in inflammatory affections of this part, is generally admitted, it is uſual at the ſame time to direct warm fomentations to the extremities, or the warm pediluvium, with the view of determining the force of the circulation towards theſe parts.

The fears, however, which are entertained on this head, I cannot but think, are in a great degree imaginary. The change in the diſtribution of the blood in this way lies chiefly between the capillary ſyſtem of veſſels generally, and the large veſſels about the heart. The conſtriction, by cold, of one part of the capillary ſyſtem of veſſels, produces a correſponding effect on the whole; and the vaſcular ſyſtem of the brain, at leaſt that part of it which is the immediate ſeat of inflammation, is perhaps to be conſidered as a part of the capillary ſyſtem. It is, at leaſt, certain that a conſiderable application of cold to the ſurface of the body induces torpor of the brain, and impedes the due exerciſe of its functions.

On the other hand, the effect of the pediluvium, or of warm fomentations to the extremities, is not merely that of increaſing the circulation in thoſe parts, but operates forcibly as a ſtimulus to the brain, increaſes its energy, and, in a ſhort time, the vaſcular action throughout the ſyſtem; as is evident by the increaſe of the heat of the body, the fulneſs of the pulſe, and the production of ſweat, which ſoon follow. It produces, in fact, as might be expected, conſequences the reverſe of thoſe which are induced by cold.

In this point of view, the practice of applying warm fomentations and the like to the extremities in fever ſeems to be equivocal, and only adapted to that ſtate of things where a ſtimulus to the brain is clearly indicated. I have repeatedly ſeen reaſon to believe, when warm fomentations have been employed early in fever, for the purpoſe of relieving a more than ordinary affection of the head (ſuch as violent delirium), that they have tended rather to aggravate than mitigate a ſymptom, which owed its origin to an already too active ſtate of vaſcular action in the brain.

If remedies of this deſcription are proper in fever, it muſt be towards the cloſe, at the time that wine and other ſtimulants become uſeful: And the ſame probably may be ſaid of bliſtering, and the other means of exciting inflammation on the ſkin.

## Sect. XI.------*Of the Uſe of Mercury in Fever.*

THE laſt remedy I ſhall have occaſion to notice at preſent, for the cure of fever, is MERCURY, a medicine whoſe herculean powers have made it be reſorted to in many deſperate caſes of diſeaſe, as a forlorn hope, and without any particular indication.

The good effects of mercury in fever have been moſt experienced in the fevers of tropical climates; in which may be included even the northern ſtates of America, ſince their ſummer diſeaſes bear ſo ſtrong a reſemblance to thoſe of the Weſt Indies. Almoſt all the writers on the diſeaſes of hot climates concur in ſentiment with regard to the utility of this remedy. It has been employed in different forms, as by *inunction*, by giving *calomel* internally, and ſometimes in the form of *ſublimate*.

Some practitioners have given calomel in combination with other remedies, as *antimony*, or *opium;* and have believed that its good effects were thereby much enhanced.

Mr. *Tainſh*, a navy ſurgeon, who treated a number of caſes of the plague on the coaſt of Syria, at the celebrated ſiege of *Acré*, in the year 1799, remarks that the good effects of calomel and antimony were deciſive. After an emetic, he gave ten grains of calomel, and ſix of the *antimonial powder*, every four hours, till the fever abated, when the *bark* was given with wine*.

Mr. *Milne*, in his ‘ Account of the Diſeaſes which prevailed on board Ship, in two Voyages to the Eaſt Indies, in the Years 1793-8†, ſays that he gave calomel and antimony with great ſucceſs, in the cure both of dyſentery and fever. In the latter diſeaſe, ſix grains of calomel, with four of the *antimonial powder*, were given night and morning; which generally, he ſays, occaſioned three or four ſtools. This he continued, unleſs the feveriſh ſymptoms diſappeared, till the mouth became affected, when the ſymptoms were found, for the moſt part, to be removed. He followed the ſame practice in *intermittents*, and with equal ſucceſs. The patients, he adds, never complained of being weakened by theſe evacuations; and, by particular attention to their diet, none of them relapſed.

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* See *Medical and Chirurgical Review*, vol. viii, p. 85.

† 8vo, London, 1803: publiſhed for Phillips.

Mr. *Beane*, in the fever of *Demerara*, after bleeding and purging, gave mercury, which, when it excited ſalivation, never failed to cure. On diſſection of a caſe which terminated fatally, patches of inflammation were obſerved on the *pia mater*, under the temporal muſcles: water was collected between this membrane and the *arachnoid*, and in the ventricles. And points of bleeding veſſels were ſeen in the medullary ſubſtance of the brain*. This caſe at once illuſtrates the theory I have ventured to advance, and confirms the practice deducible from it.

Mr. *Lempriere*, who practiſed in Jamaica, finding that calomel was often exhibited in immenſe quantities without exerting any apparent action, was induced to employ the *ſublimate*, in doſes of the eighth part of a grain, with the addition of ten drops of laudanum. Theſe were given every hour, until ſome affection of the mouth was obſerved, or until the more alarming ſymptoms had conſiderably abated; when they were adminiſtered at more diſtant intervals, or omitted altogether. The tincture of opium, combined with the mercury, did not appear, he ſays, to affect the head, even when given in very large doſes. Mercury was given in this way to fourteen patients labouring under the *tropical continued fever*, two only of which died, and theſe had been ill two or three days before the remedy was adminiſtered*.

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* See *Mem. of Med. Soc. of London*, vol. v, art. 35.

But it is not in the fevers peculiar to tropical climates alone, that mercury has been found ſerviceable. The author juſt quoted obſerves, that the *typhus*, or contagious fever, required much the ſame general treatment, with a freer uſe of ſtimulants, and a generous diet.

Dr. *Wright*, who practiſed extenſively both in the Weſt Indies and in Europe, by no means limits the uſe of mercury to the former. He gave calomel in *typhus* in Scotland, where there was any reaſon to ſuſpect viſceral inflammation, but in leſs doſes than in the Weſt Indies. He ſeldom exceeded, he ſays, five or ſix grains daily in Europe, while in the Weſt Indies he gave twenty grains within the ſame period*.

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* *Practical Obſervations on the Diſeaſes of the Army in Jamaica:* by William Lempriere, *Apothecary to the Forces.* 1799.

The practice of the late Dr. *Geach* of Plymouth, a phyſician of great and merited reputation, and of very extenſive practice, is highly deſerving of notice, and, as appears from the beſt teſtimony, was not more bold than ſucceſsful. The account of it is given by Mr. *Stephen Hammick*, Jun., Dr. G.'s aſſiſtant in the *Naval Hoſpital*†.

" Whenever," ſays Mr. H., " the Doctor was called to a perſon labouring under ſymptoms of typhus fever (if within two or three days of its firſt attack), he uſed conſtantly to preſcribe fourteen or ſixteen grains of ipecacuanha, aſſiſting its operation with camomile tea. Three hours after the ceſſation of the vomiting (if the patient was delicate), a bolus of five grains of calomel, with a ſcruple of rhubarb, was given; but if the patient was of a ſtrong habit, a ſcruple of jalap, with eight or ten grains of calomel, were adminiſtered. If evacuations were not thus produced within eight or ten hours, caſtor oil, or ſome other laxative, were given occaſionally till the deſired effect had taken place. The windows of the room were opened in ſuch a manner, that the room was kept perfectly cold, without ſubjecting the patient to a current of air; the bed-curtains nearly all withdrawn, ſo that free circulation was admitted, even in winter; taking care to have (where it could be procured) frequent changes of linen. After the ſtools, the following boluſes were immediately ordered:—calomel eight grains, pulv. antimonial. four grains, conſ. cynoſb. q. ſ. ut f. bol.; to be taken every ſix hours when the ſymptoms were ſlight: but when the caſe was very urgent, or he had not been called in till the fever had made ſome progreſs, then the above quantity was given *every four*, *three*, or even *every two hours*, permitting weak lemonade, tamarind, or cream of tartar water, to be taken for the common drink. If the fever ſtill went on, and the patient's ſtrength became exhauſted, a little port wine diluted with water was allowed; uſual quantity half a pint, ſeldom or never exceeding one pint in twenty-four hours. To any perſon unaccuſtomed to give theſe boluſes, diarrhœa, ptyaliſm, or vomiting, would naturally ſuggeſt themſelves as the inevitable conſequences in almoſt every caſe of their exhibition; but the fact, in a multiplicity of inſtances, directly proves the reverſe; for in general we are obliged to order a little caſtor oil, rhubarb, with kali ppt.; or an electuary, made of equal parts of cream of tartar and conſerv. cynoſb. Ptyaliſm has ſeldom, as I have before ſaid, followed their uſe, notwithſtanding they have been continued to ſome patients every *three* hours, for eighteen or twenty days: but when they did affect the ſalivary glands, the cure was always certain and expeditious after that event, appearing to check immediately the progreſs of the diſorder. When diarrhœa ſupervened, the Doctor was cautious how he checked that diſcharge, never attempting it unleſs the patient was very feeble or low; for, in ſeveral inſtances where numerous ſtools have been procured, the patients have found themſelves relieved of a delirium which had been on them for three or four days before; but when the diarrhœa continued profuſe, exhauſting the patient's ſtrength, then means were employed for its removal, commonly a ſcruple of conf. opiat., or an ounce of poppy ſyrup, ſufficed: if they did not, half a grain or a grain of opium was combined with the calomel and antimony, but ſeldom were we neceſſitated to ſeek the aſſiſtance of opium, and in no other way did the Doctor ever adminiſter opium in this diſeaſe. Vomiting, when excited, was commonly allayed by the ſaline mixture in the ſtate of efferveſcence: when this ſymptom much haraſſed the patient, the antimonial powder was reduced from four to two grains. This was the ſyſtem purſued throughout the whole of the ſtages of this fever, never adminiſtering any other medicine, unleſs any extraordinary occurrence took place; therefore the whole dependance for a cure may be clearly perceived to be entruſted to the calomel and antimony. In ſome few caſes, when delirium was great and the head much affected, a bliſter was applied to the nape of the neck: as ſoon as ſigns of amendment appeared, the boluſes were diſcontinued, *and not till then*. A little mutton broth or jellies were allowed, and a decoction of bark with balſ. tolu was given: but the bark in ſubſtance was never given by the Doctor; for the bad effects of it in this form, when exhibited to weak ſtomachs, far outweighed, in his opinion, any good it ever produced. It is well worthy of remark, that in all thoſe caſes where the ſymptoms were very urgent, and the putrid appearances more apparent, that there the boluſes ſcarcely ever were obſerved either to ruffle the bowels or ſtomach."

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* See a paper by this gentleman in *Med. Facts and Obſ.*, vol. vii.

† See Dr. Beddoes's *Weſtern Contributions*, p. 380.

Dr. Geach, it ſeems, was led to this practice at firſt, about thirty years ago, whilſt attending the crew of a large Ruſſian ſhip, which had been driven into the port of Plymouth in the greateſt diſtreſs. After encountering ſeveral gales of wind, her people, from great fatigue and uncommon exertions, had become very ſickly, and the *typhus* fever raged among them with much violence, accompanied with ſymptoms of great malignity. He then obſerved, that the only men who eſcaped the contagion on board were men under the influence of mercury, which they had taken for the cure of the *lues venerea.* This fact made a great impreſſion on his mind; and ever after that time he was accuſtomed to give mercury in ſuch fevers, though not with ſo much freedom till the laſt ſeven years of his life.

With regard to the prevention of Fever by mercury, I muſt obſerve that it is not univerſal; as more than one patient died of fever caught in the *Royal Infirmary* at Glaſgow, in the winter of 1803, while under the full influence of mercury for the cure of *ſivvens.* I am informed by Mr. *Wachſel*, the Reſident Apothecary at the Small-pox Hoſpital, that perſons under the influence of mercury have been found, in repeated inſtances, to reſiſt variolous infection.

The cure of fever by mercury is analogous with its effects in many other inflammations, particularly thoſe of an inactive kind, and which do not well bear large evacuations. "Nothing embarraſſes more," ſays Dr. Gilchriſt, "than inflammation in a low ſtate; but quickſilver is a powerful antiphlogiſtic, and removes inflammation without accelerating the motion of the fluids, which it rather diminiſhes by ſubduing their inflammatory diſpoſition, when there is little or no fever." The late Dr. *Clark*, of Newcaſtle, was accuſtomed to employ mercury in various inflammations, as well as in remittent and continued fever, and had great faith in its efficacy. He gave it parcularly in dyſentery and in acute rheumatiſm*.

Among other teſtimonies that have been given in favour of mercury, combined with opium, in inflammatory diſeaſes, I ſhall only refer to a paper publiſhed in the 9th vol. of Dr. Duncan's *Commentaries*, written by Dr. *Hamilton*, of Lynn. This gentleman adminiſtered it in pneumonic inflammation, in acute rheumatiſm, and, in ſhort, in inflammations in general, both external and internal. The doſe uſually given was from one to five gains of calomel, with from a quarter of a grain to a whole grain of opium, according to the age and ſtrength of the patient, every ſix, eight, or twelve hours. The medicine was thus continued until the diſeaſe was reſolved, either by ſweating, purging, or, more commonly, both; or by a ptyaliſm being raiſed. Bloodletting was premiſed and repeated, in caſes that ſeemed to require it. More lately, Dr. *Yeats*, of Bedford, has given his teſtimony to the utility of the ſame plan of cure*.

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* See *Fenwick's* Life of Clark.

It is not merely of late years that mercury has been held in eſteem in the cure of fevers and inflammations; as will appear from the following references, for which I am indebted to Dr. Beddoes†. "There ſeems every reaſon to ſuppoſe that mercury has continued more or leſs in uſe in fevers and in pyrexiæ, ſince the riſe of the alchemical ſect, or before. In gout and rheumatiſm, and other complaints, it is much recommended in F. Hildanus, and Zac. Luſitanus. Boerhaave thought highly of it in ſmall-pox: Engliſh medical writers, a century ago, in inflammations. Its external and internal uſe in catarrhs, inflammations, and proper fevers, grew very common among Italian practitioners in the earlier half of the preſent century, as may be ſeen at large in Rotario *Remedio alle catarrali moleſtie e a qualſivoglia inflammazione, Verona*, 1733; and in Moreali *Syſtema febrium malignarum Mutinæ* 1739. Some time afterwards we find bleeding and mercury employed in fevers in Italy full as freely as of late in the Weſt Indies, or in America, only that bark was ſometimes largely added to the mercury. Benvenuti *(diſſ. quâ epid. febres deſcribuntur, necnon et cort. p. uſus Luccæ* 1754) deſcribes a fever, attacking particularly full and robuſt young people. Diſſection ſhewed either inflammation or mortification of the meninges of the brain, of the ſtomach, bowels, or liver. At the onſet copious bleedings were ordered, and three or four times repeated. Then lenitive electuary with two ſcruples of *mercurius dulcis* was given, by which means Benvenuti reſtored many to their priſtine health. When this plan did not anſwer ſoon, a dram of bark was added to a ſcruple of the mercury, and of this powder a ſcruple taken every four hours for three days, when the fever commonly diſappeared. In deſperate caſes he gave three drams of bark with one dram of the mercury at once. In this way, he ſays, he cured many patients: his ſucceſs he aſcribes principally to the mercury; and declares he never obſerved any bad conſequence from the practice. A great deal of information may be found in the following learned diſſertation:—J. J. Rambach *Uſus mercurii in morbis inflammatoriis. Halæ*, 1794."

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* See a paper in Dr. Duncan's *Annals of Medicine for the Year* 1802.

† *Weſtern Contributions*, p. 466.

Thus there appears to be very ſatisfactory evidence of the utility of mercury in fevers of various deſcriptions, as well as in other inflammations. Its mode of acting, however, is not ſo clearly aſcertained. It ſeems to be not altogether agreed, whether mercury is to be looked upon as an *evacuant* merely in fever, or as operating *ſpecifically*, by its well known faculty of ſuperſeding various diſeaſed actions in the ſyſtem. In many of the inſtances of its employment above recited, we find it not only producing copious evacuations by ſtool or vomit, but purpoſely combined with emetics and cathartics of the moſt active kind. This, however, is no argument againſt its *ſpecific* operation; for calomel frequently induces ſalivation, at the time that its purgative effects are moſt conſpicuous; as I know by repeated obſervation.

It has been remarked by ſeveral of thoſe who have employed mercury in the cure of fever, that its good effects were always moſt apparent when ſalivation took place, an effect that it was often found exceedingly difficult to bring about. But neither is this deciſive of the queſtion. For in the worſt caſes of fever, it could not, in the largeſt doſes, be brought to affect the mouth, ſo extreme was the torpor induced by the diſeaſe; while in milder caſes the mercury was found to exert its uſual action. The appearance of ſalivation, therefore, and the cure of the fever afterwards, might be only indications of a milder ſtate of diſeaſe*.

It is, however, I think, moſt probable

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* It is certain that the ſyſtem, in malignant fever, is often, to an aſtoniſhing degree, inſuſceptible of the action of mercury, and various other *ſtimuli:* and I do not ſee how this extraordinary torpor is to be explained, but upon the principle I have laid down, of a topical derangement of the *ſenſorium.* Such a condition of the ſyſtem, we well know, is induced by *hydrocephalus*, a diſeaſe that owes its origin to inflammation in the brain.

upon the whole, that mercury, when freely and repeatedly adminiſtered, operates with advantage in the cure of fever, both as an evacuant, and by its ſpecific powers. We ſee that, on ſome occaſions, it exerted little or no evacuant effect ; and the *ſublimate*, which is not remarkable for its purgative properties, was found to be attended with the ſame advantage as calomel.

Mercury certainly exerts peculiar effects on the brain ; and it is probably through the influence of the brain, thus irritated, that the general febrile ſtate is produced which is ſo commonly obſerved under the free uſe of mercury, and not by the immediate application of the medicine to the heart and general vaſcular ſyſtem. Dr. Adams, remarking on its uſe in the cure of *ſyphilis*, ſays, " the fever it produces may be truly called *ſpecific*, from its uniformity and total difference from all others*."

Moderately uſed, mercury often relieves headach depending on local increaſed vaſcular action ; and it is conſidered as *ſpecific* in the cure of that variety of inflammation of the brain or its membranes, which is improperly called *hydrocephalus.* It has often, alſo, removed *gutta ſerena*, epilepſy, and other *ſenſorial* affections. Employed ſo as to excite ſalivation, it has frequently contributed to the cure of obſtinate intermittents, by rendering them obedient to the Peruvian bark*, which they had before reſiſted; and it ſuperſedes various other diſeaſes that are kept up by an acquired habit.

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* *Eſſay on Morbid Poiſons*, 4to, p. 86, 2d edit.

When mercury is carried to exceſs, it produces headach, general debility, incapacity for mental exertion, and, finally, mania; effects that very clearly demonſtrate its influence on the *ſenſorium.* We are prepared, therefore, to expect that it will be hereafter reſorted to with more confidence as a remedy for fever; though, as happens with regard to moſt others, we have yet much to learn of the circumſtances which ſhould in all caſes govern its adminiſtration.

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* Dr. Donald Monro. *Medical Tranſactions*, vol. ii, p. 325.

## Sect. XII.-----*Of the Natural Cure, or Spontaneous Termination, of Fever.*

AFTER all that has been ſaid reſpecting the cure of fever by the different methods pointed out above, it is not to be overlooked that fever has a ſtrong diſpoſition to terminate ſpontaneouſly after going through certain ſtages; and hence that the effects of remedies are liable, on many occaſions, to be falſely eſtimated. This tendency is ſo remarkable, that many phyſicians have choſen to rely on it for a cure, and have diſſuaded from all artificial means of bringing the diſeaſe to a *criſis*, preferring to leave the buſineſs altogether to nature. Others, again, deny the power of medicines to cut ſhort the progreſs of fever, and think that phyſicians deceive themſelves, by aſcribing effects to cauſes that have in reality little or no influence on their production.

Dr. *William Brown*, one of the ſurgeons to the *Royal Infirmary* of Edinburgh, in a paper publiſhed in Dr. Duncans' *Annals of Medicine for* 1802, entitled ‘ Obſervations on the Duration and Courſe of Fever in Britain, and on the Efficacy of Medicine in interrupting its Courſe, and ſhortening its Duration,' endeavours to ſhew, from the records of the Infirmary, that medicine has not the effect of putting a ſpeedy termination to fever; and he even thinks it proved, by the ſame evidence, that the diſeaſe was not at all ſhortened by the medicines applied.

Out of 280 inſtances regiſtered, which he particularly examined, only *twelve* were marked, in which the fever ceaſed on the day that medicine was firſt applied; viz., one on the 5th, one on the 6th, four on the 7th, one on the 8th, one on the 10th, and three on the 13th day of the diſeaſe. In the three firſt days after admiſſion, 71 caſes of remiſſion took place; which is only one in four. And of the whole number of caſes, (280), it appears that only 159 were cured within the period of ſix days after the application of medicine was begun.

Theſe facts, however, go only to prove, that when the courſe of fever is once eſtabliſhed in the ſyſtem, and the diſeaſe has proceeded for a certain number of days, it is exceedingly difficult to interrupt its progreſs by the ordinary means of cure. This has been at all times known to practitioners, and was, indeed, the principal cauſe, combined with the frequent ſpontaneous termination of the diſeaſe, of their adopting in general the palliative mode of treatment. The concluſion drawn by Dr. Brown by no means applies to the early ſtages of fever, in which, beyond all doubt, the diſeaſe, in a large proportion of inſtances, is capable of being interrupted in its progreſs, and brought to a ſpeedy termination, by the active means above pointed out. If any doubt of this remained, it would be completely removed by this writer himſelf, in the following communication, ſubjoined to his remarks: it is too much in point, and too important, to be withheld.

"In the months of October and November 1779, I ſerved on board his Majeſty's ſhip Namur, of 90 guns, at that time one of the Channel fleet, under the command of Sir Charles Hardy. A great many of the crew were affected with diſeaſe, ſo that our ſick liſt amounted generally to from 70 to 90 names; at leaſt one-half of theſe were under fever, and that frequently combined with a flux. Mr. Warren, the ſurgeon of the ſhip, attacked this fever with a medicine of his own, the compoſition of which he did not diſcloſe. He told me, the occaſion that induced him firſt to employ it was his bad ſucceſs in curing fever while in the Weſt Indies. It was the only medicine he adminiſtered in febrile diſeaſes; and I ſaw him uſe it in fevers, fluxes, and rheumatiſm.

"I do not know if this drug falls under the deſcription of quack medicines, becauſe its inventor was a regular practitioner, or a regularly educated ſurgeon. As it is a ſecret, it will appear to many ſuſpicious. But whatever be men's opinions concerning the name by which it ſhould be known, I think it my duty to bear teſtimony to what I ſaw effected by it. Educated with an utter averſion to all ſecrets, I confeſs I was prejudiced againſt it. I was rather diſpoſed to note its failures than record its ſucceſs. Its good effects, however, were too conſpicuous to permit me to heſitate; and I have often ſaid, and ſtill aver, that I never ſaw any medicine to which I could attribute the uniform, and almoſt certain, removal of the febrile ſtate, except this.

"Mr. Warren gave his medicine in the form of pills. From the violence of their operation, they obtained among the ſeamen the name of Dr. Warren's Thunderbolts.

The effects produced by them gave, in fact, a juſt title to this appellation. Soon after being ſwallowed, a moſt violent vomiting and purging enſued, by which the patient being greatly exhauſted, a profuſe ſweat ſucceeded, and a ſpeedy removal of fever, in almoſt every caſe, in a few hours took place. The medicine was uſually given in the evening, between ſeven and eight o'clock. At our morning viſit, we generally found the ſick completely drenched in moiſture, but free of his febrile complaints. If this effect had not been produced, another doſe of the medicine was immediately given.

"It muſt be remarked, however, that this intermiſſion was ſeldom permanent. The febrile attack was often repeatedly renewed after thirty-ſix or forty-eight hours; but it was as repeatedly overcome by a new exhibition of the medicine.

"The ultimate ſucceſs of this practice was ſufficiently great to recommend it to attention. During three months that I remained on board this ſhip, we had not more than three or four deaths, though the ſickneſs was very general; and very few of the ſick were ſent to the hoſpital."

After this, it is impoſſible to admit the author's concluſion, that fevers cannot be put a ſtop to by an active mode of cure. Yet the application of ſuch means, in ordinary practice, is a matter of ſome difficulty, and involves queſtions of prudence, as well as of ſcience, and which can only be ſatisfactorily ſolved by reference to the particular varieties of the diſeaſe, and the circumſtances of individual caſes. But this muſt be left for future diſcuſſion.

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After all it may be aſked,—is not the inflammation which takes place in the brain in fevers often *ſpecific*, or of a peculiar nature; differing in its laws, both with regard to the progreſs and the cure, from ordinary inflammation? This ſeems, indeed, not improbable, when we conſider that the diſeaſe is liable to be excited by a number of very different cauſes, many of them undoubtedly of *ſpecific* origin, as the *morbid poiſons*, each of which produces fever, but, in each caſe, characterized by ſome peculiarity of ſymptoms.

In common *contagious* fever—in fever ariſing from *marſh miaſmata*—in ſmall-pox, meaſles, *ſcarlatina*, and the other eruptive fevers, although there are, in all, unequivocal marks of the diſeaſe being ſeated primarily in the brain, yet the general train of ſymptoms, their progreſs, and manner of terminating, are not *preciſely* alike in any two of them.

Thus, in *contagious* fever the general affection of the ſyſtem aſſumes a *continued* form; *marſh miaſmata* diſpoſes to the *intermittent* type: while the *exanthematic* poiſons give riſe to fever combined with certain *topical inflammations*, each peculiar to its own poiſon.

If, then, there be any foundation for the ſuppoſition, that the inflammation which ariſes in the brain in fever is of a *ſpecific nature*, as well as, on many occaſions, of *ſpecific origin*—it is to be expected, from the analogy of other inflammations produced by *ſpecific* morbid poiſons, that the influence of remedies will not be preciſely the ſame as in ſimple inflammation. Thus we find that *venereal*, *gouty*, and *cancerous* inflammation, &c., are to a certain degree independent of ordinary remedies; and either require *ſpecific* medicines for their cure, or run their courſe in ſpite of any interference.

Againſt ſuch a ſuppoſition it may be argued, in the firſt place, that fever generated by heat, cold, and the other ordinary cauſes of inflammation, is not to be diſtinguiſhed from common *typhus* or contagious fever; and that the difference obſerved occaſionally between them is aſcribable only to degree, and not to any peculiarity in the nature of the affections.

*Secondly*, ſome of the forms of fever are convertible into one another, as the *intermittent* into the *remittent*, and this again into the *continued* form; and *vice verſa*. It was obſerved by Dr. *Huck*, ſpeaking of the Fevers of Jamaica, that it often depends upon the manner in which the patient is treated in the beginning, whether he ſhall have a *yellow*, or only a *remitting* or *intermitting* fever.

*Thirdly*, fevers ariſing from contagion are often curable by means which take off ſimple inflammation; as bloodletting, ſweating, &c. Even the exanthematic fevers may ſometimes be interrupted in their courſe by violent impreſſions made upon the ſyſtem. Thus *ſcarlatina* has been at once checked by an emetic, and by the cold affuſion: and the courſe of the ſmall-pox likewiſe appears to be interrupted by cold, ſo that neither fever nor eruption follows. How far this applies to other *exanthemata* is, I believe, not known.

It appears, therefore, that, even admitting the inflammation of the brain in fever to be *ſpecific*, the diſeaſe is ſtill in a great meaſure under the influence of the ordinary remedies of inflammation. To what extent the effects of theſe may be modified by ſuch a circumſtance, can only be learned from experience. It ſeems, however, to explain the good effects that have been derived from mercury in the cure of fever, as this medicine is found ſo powerful in ſuperſeding the action conſequent upon moſt morbid poiſons.

It is a ſubject not merely of curious inquiry, but of great practical importance likewiſe, to aſcertain, with regard to thoſe fevers which attack but once during life, whether, when the fever is interrupted at its commencement, or in its early ſtages, the uſual inſuſceptibility is obtained. I ſuſpect that it is not, for the following reaſons:—

What is called the *conſtitutional affection* in caſes of morbid febrile poiſons, I hold to depend, as in other fevers, upon a local inflammatory action in the brain. This action it is which produces the change that renders the ſyſtem afterwards inſuſceptible of impreſſion from that particular cauſe. If this action is prevented taking place by the brain being, at the time, under the influence of another poiſon, as in the well known caſe of ſmall-pox being interrupted by meaſles, the brain ſtill remains ſuſceptible of the impreſſion of the former poiſon, and the diſeaſe peculiar to it ariſes as the other ſubſides.

In ſhort, till the peculiar action has taken place in the brain, the deſired inſuſceptibility is not wrought. And it ſeems probable, that if the action ſhould be prevented, or interrupted in its courſe, by any other cauſe, as by cold or any ſudden and violent impreſſion on the ſyſtem, the ſuſceptibility to the diſeaſe in future would, in like manner, not be deſtroyed.

This enables us to account for the occurrence of ſmall-pox at a remote period after variolous inoculation, ſuppoſing this to have been conducted under ſo ſtrict a regimen as to prevent any *conſtitutional affection*, as it is called, from taking place. It will, perhaps, ſerve alſo to explain ſome of the failures of the vaccine inoculation; for if no *conſtitutional affection* takes place, that is, if no inflammatory action ariſes in the brain (and very often it is ſo trifling that none is to be perceived), it is not conceivable that ſo great a change ſhould be wrought in the ſyſtem, as to render it ever after inſuſceptible of the action of ſo powerful a poiſon as that of ſmall-pox. There ſeems to be no cauſe adequate to the effect.

## Sect. XIII.----*Of the Diet of Patients in Fever.*

A FEW words will ſuffice on this ſubject. It would have been unneceſſary, indeed, to have made any obſervation with regard to it, had practitioners condeſcended to take Nature for their guide, inſtead of acting in direct oppoſition to her dictates.

The loathing of food that takes place at the very commencement of fever, and continues throughout its courſe;—the immediate ſtop put to digeſtion, as manifeſt in the matters often diſcharged from the ſtomach after having been taken ſeveral days;—and the vomiting and diarrhœa that are ſo frequently excited by taking food into the ſtomach under fever, might ſerve to convince us of the impropriety of the practice. Yet the fear of weakneſs, upon the idea that this conſtituted the eſſential part of the diſeaſe, has led ſome practitioners to preſcribe the uſe of ſtimulating and nutritious articles of diet, as if the giving food were tantamount to giving ſtrength to the body.

A recent writer, otherwiſe of good obſervation, ſays, " it is neceſſary in typhus to uſe every means in our power to increaſe the quantity of blood." This, to me, appears quite hypothetical. The ſuggeſtion, indeed, is limited by the obſervation, " that the quantity taken at one time ſhould be ſmall, and only repeated as often as the patient can take it *without oppreſſion.*" If this rule is properly attended to, little harm will be done; but, at the ſame time, very little food will be taken.

The obſervation of thoſe we are moſt accuſtomed to rely on has ſufficiently evinced, that there is very little room for the exhibition of food in fevers; and that, in general, our beſt guide will be the inclinations of the patient: while no cauſe is ſo conducive to relapſe in convaleſcents, as the too early permiſſion to indulge in a ſtimulant and nutritious diet.

# *RECAPITULATION.*

MY object, in the foregoing pages, has been to eſtabliſh the two following propoſitions :—

*Firſt*, That fever is not originally a diſeaſe of the whole ſyſtem, as is commonly thought, but *a topical affection of the brain.*

*Secondly*, That this affection *conſiſts in inflammation* ; the general diſorder obſerved in the ſyſtem, or what is called the *febrile* ſtate, being merely *ſymptomatic* of this, the ſame as in other inflammations.

In ſupport of the former propoſition, I have attempted to ſhew, that all diſeaſes are neceſſarily *local* in their origin, or affections of ſome one particular organ or part of the body, influencing the reſt of the ſyſtem in a ſecondary way only.

This might be inferred from the known laws of the human œconomy ; according to which, we find that different parts are endued with different ſuſceptibilities, which render them liable to impreſſion from certain cauſes only, and inſenſible to others.

But it is proved, likewiſe, by attention to the hiſtory of diſeaſes themſelves. For if what are called *univerſal diſeaſes*, or diſeaſes of the whole ſyſtem, be traced to their origin, there will almoſt always be found marks ſufficiently obvious of the diſorder of ſome particular organ, affecting either its ſenſibility or the due performance of its functions, and commonly, indeed, both together; while the general affection of the ſyſtem may be obſerved to come on ſubſequently to this.

This poſition will probably be diſputed by many; becauſe it has been remarked by ſome of the moſt reſpectable practical writers, that in inflammations, both internal and external, the *general* affection often appears to precede the *local* for ſeveral hours, or even days. Thus Dr. Cullen ſays, with regard to Pneumonia—" this diſeaſe almoſt always comes on with a cold ſtage, and is accompanied with the other ſymptoms of pyrexia. Sometimes the pyrexia is from the beginning accompanied with the other ſymptoms (the local ones); but frequently it is formed for ſome hours before the other ſymptoms become conſiderable, and particularly before the pain is felt*."

Without preſuming to queſtion the truth of this, I may be permitted to remark, that the obſervation has been chiefly made in regard to inflammation of the lungs, where it is very difficult to aſcertain the preciſe period of attack *locally*, on account of the natural inſenſibility of theſe organs. Inflammation, it is well known, may take place in the lungs in the moſt violent degree, without being attended by much pain; and till this ariſes, or the functions of the organ become conſiderably deranged, the diſeaſe is not ſuſpected to exiſt.

Another circumſtance leading to error here is, that inflammation often comes on in the firſt days of fever, and the fever itſelf ſubſides. In this caſe, the general affection obſerved to precede the ſecondary topical diſorder is, in reality, another diſeaſe, and affords an inſtance, not unfrequent, of what has been called the *converſion* of diſeaſes into one another. This, therefore, furniſhes no argument againſt the opinion propoſed.

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* *Firſt Lines*, § cccxxxvi.

But whatever concluſion may be made upon this point, the iſſue of the queſtion with regard to the topical nature of fever is not neceſſarily involved in it; for though it be admitted that there are ſuch things as general or univerſal diſeaſes *ab origine*, I ſhould ſtill be diſpoſed to contend for the locality of fever, and its ſeat in the brain; and that for the following reaſons.

In the greater number of inſtances, the firſt attack of fever is imperceptible. It often happens that for many days before the diſeaſe is fully formed, that is, before it becomes a general affection, the patient is feeble and liſtleſs; he is neither well nor ill. Aſk him his complaint, and he always refers to the head as the chief ſeat of diſorder; which indeed his countenance ſufficiently indicates. He has a dull pain or heavineſs of the head, his ſleep is diſturbed and unrefreſhing, and he is incapable of his uſual mental exertions.

At this period, the diſeaſe is ſtrictly local. The brain is the ſeat of the diſorder, and thoſe functions only are deranged which immediately depend upon it.

If, in this ſtage, the diſeaſe is attacked vigorouſly, as by a powerful emetic or purgative, or both combined; or the patient is thrown into a ſweat: its progreſs is often checked, and it proceeds no further.

It not unfrequently too, at this time, ſubſides of itſelf, without the aid of medicine; many inſtances of which occur when fevers are epidemic. Such have been termed, not unaptly, *walking caſes* of fever, by the American phyſicians. Such caſes, likewiſe, are of every day's occurrence among ourſelves; but as the diſeaſe is never fully formed, nor goes through its uſual courſe, it is not called *fever*, but merely a headach or *feveriſh cold*, which is ſcarcely ſuppoſed to require medical treatment.

When the topical affection of the brain ariſes to a greater height, it begins to influence the general ſyſtem. The pulſe (as in the inflammation of other important organs) quickens, the ſkin becomes hot and dry, and the tongue exhibits that furred ſtate which, though it does not take place in the ſlighter inflammatory affections, is, I believe, a certain indication of the preſence of inflammation in the ſyſtem.

Now it is that the diſorder ſpecially acquires the name of *Fever*, and becomes characterized by a train of ſymptoms, all of which are either referable to a deranged ſtate of the brain and its functions, or are ſuch as ordinarily accompany inflammation wherever ſeated. There is no proper ſymptom in fever which may not be referred to one or the other of theſe ſources.

The *topical* nature of fever is evident again, in the manner in which the diſeaſe terminates. The *general affection*, namely, the increaſed or irritated action of the heart and arteries, the heat of ſkin, the fur on the tongue, and the thirſt, leave the patient: but the marks of diſordered brain ſtill ſubſiſt, and only gradually and ſlowly diſappear. From a ſtate of watchfulneſs or of ſtupor, he falls into a deep ſleep, which continues, often, with ſhort intervals, for many days. The headach is renewed by the moſt trivial cauſes, as by a glaſs of wine or the leaſt bodily exertion; and the patient feels that his mind is greatly weakened. His ſleep continues long after to be diſturbed by frightful dreams: he is often left in a ſtate of deafneſs, or with the other ſenſes impaired—to ſay nothing of the epileptic attacks, the hemiplegias, or more partial palſies, and other *nervous affections*, as they are called, which ſo frequently follow fever. The hair generally falls of, indicating a preternatural increaſe of vaſcular action in the head to have taken place.

I have endeavoured to ſhew, that the *eſſential* or *pathognomonic* ſymptoms are the ſame in every proper fever, and that they are all referable to the brain. Thus, what are called the *animal functions*, as the external and internal ſenſes, and the voluntary power, all of which depend immediately on the condition of the brain, are conſtantly obſerved to be deranged; whilſt the *vital* and *natural* functions, which are more remotely connected with the *ſenſorium*, are only ſecondarily diſturbed in fever.

That fever has its ſeat *primarily* in the brain, is further attempted to be ſhewn by a conſideration of the *remote* and *prediſpoſing* cauſes, and by the effects which it leaves behind. A diſordered ſtate of the ſenſes, of the voluntary power, and of the intellect, are well known to be very frequent conſequences of fever.

The truth of the *ſecond* propoſition, namely, that fever conſiſts in inflammation of the brain, is inferred from the general characters of the diſeaſe, and its analogy with other inflammations.

The patient, if not in a ſtate of ſtupor, almoſt invariably refers to the head as the chief ſeat of complaint. The heat of the head is increaſed, even though the reſt of the body be cold. The marks of increaſed vaſcular action in the veſſels of the brain are further evident, from the diſtenſile pain uſually complained of;—from the throbbing of the arteries, perceptible not only in the temples, but often in the carotids;—and from the *excited* or the *oppreſſed* ſtate of the ſenſorial functions.

The analogy between fever and inflammation is evinced in many other reſpects: in the ſtate of the blood, which, in both, is often covered with a buffy ſurface:—in the nature of the *exciting* and *prediſpoſing* cauſes, which appear to be the ſame in both affections:—in their occaſional alternation:—and in the ſimilarity of the remedies that are uſed with the greateſt ſucceſs in the cure of each.

We have ſeen that the characters of *fever* and of *phrenitis*, as deſcribed by authors, are eſſentially the ſame, and that the two affections have never been perfectly diſcriminated in practice; but have gone under one or the other denomination, according to the predominance of particular ſymptoms; while they are produced by the ſame exciting cauſes.

All authors have admitted the frequent combination of phrenitis with fever, an occurrence by much too frequent to be merely accidental. That it has not been allowed to be generally preſent in fever, is leſs, perhaps, to be aſcribed to the want of ſufficient characters, than to the limitation of the term *phrenitis* to the moſt acute ſtate of inflammation, where the delirium is of the furious kind,—a ſymptom by no means eſſential to inflammation of the brain, which, as has been proved, often takes place to ſuch a degree as to deſtroy the ſtructure of the organ, with little mental derangement.

The definition that has been given of phrenitis by authors, will include but a ſmall proportion of the caſes of *brain-affection* which actually occur in practice. This organ, like all others, is doubtleſs liable to ſuffer inflammation in every poſſible degree; and the inflammation may be variouſly ſeated;—in the membranes, or in the ſubſtance of the brain itſelf;—or in any part of theſe. And the character of the diſeaſe will neceſſarily differ accordingly.

But in authors, we find ſcarcely more than one form of inflammation of the brain deſcribed, and that the moſt acute, to which the term *phrenitis* has been chiefly limited. The minor affections of this organ have uſually received their denomination from ſome ſymptom, the ſeat of which is often very remote from the primary diſeaſe, which is very frequently altogether overlooked.

Thus, convulſive motions of various kinds,—palſies of different parts,—pains which are often falſely referred to rheumatiſm,—ſickneſs of the ſtomach and vomiting,—torpor of the inteſtinal canal, and probably alſo purging,—with many other diſorders improperly conſidered as primary affections, often owe their origin to a deranged ſtate of the ſenſorium, induced by ſlow and partial inflammation and its conſequences.

I have ſhewn, that diſſection, which in general appears ſo well calculated to illuſtrate the ſeats and cauſes of diſeaſes, is by no means an infallible guide, but is often incompetent to afford the information ſought for.

In ſo important an organ as the brain, upon the integrity and healthful condition of which ſo many of the functions depend, we ought not to expect to find, in general, the groſſer effects and conſequences of inflammation; ſuch as ſuppuration, or gangrene. Theſe, unleſs they take place very ſlowly, are ſcarcely compatible with life. Degrees of inflammation infinitely ſhort of this, may be ſuppoſed to unfit ſuch an organ as the brain for the due performance of its functions, without leaving behind them any traces diſcoverable by the eye of the moſt ſcrutinizing anatomiſt.

Yet conſidering how rarely the inquiry has been made in fever; and taking into account the natural obſtacles which oppoſe themſelves to an accurate examination, as already ſtated; the inſtances in which unequivocal marks of preceding inflammation in the brain have been detected after fevers, are comparatively very numerous.

Could we be ſatisfied with the leſs ſtriking, but perhaps ſcarcely leſs ſtrong, proofs of inflammatory action; ſuch as general fulneſs of veſſels, ſerous effuſion, and, above all, an unuſual degree of vaſcularity in the ſubſtance of the brain (as ſhewn in its greater firmneſs, heightened colour, and the increaſed number and ſize of veſſels); I have reaſon to believe, both from what I have myſelf ſeen, and from the obſervations of others who have paid attention to the ſubject, that there are few, if any, fatal terminations of fever (that is, where the patient dies from the fever itſelf, and not from any ſupervening diſorder) in which ſuch appearances might not be detected.

The brain is not the only organ which may have its functions greatly deranged during life, without leaving traces of previous morbid affection correſponding with the magnitude of the diſeaſe.

In diabetes, the mode of acting in the kidneys undergoes a total change. Inſtead of urine, their proper ſecretion, there is afforded a vaſt quantity of a ſaccharine ſubſtance, ſuch as is no where found in the bloodveſſels, or any other part of the ſyſtem. Yet, in ſuch caſes, it has repeatedly happened that the kidneys, after death, have, to appearance, been very little altered from their natural ſtate; though the derangement of their functions. and the painful or uneaſy ſenſations of the patient when living, ſufficiently point them out as the principal ſeat of diſeaſe.

So little, indeed, has been the apparent change of ſtructure in the kidneys in theſe caſes, that ſome pathologiſts have looked for the primary ſeat of the diſeaſe elſewhere, and have accuſed the ſtomach, the liver, and other parts: but certainly with very little probability.

The kidneys, in patients dying of diabetes, have been generally obſerved to be increaſed in bulk, ſofter in their texture, and conſiderably more vaſcular, than in health;—appearances which imply an increaſe of action in their veſſels, bordering at leaſt on inflammation, and attended with an augmentation of their ſecreting powers. It is only in the higher degrees of inflammation that the functions of parts become ſuſpended, or altogether deſtroyed.

The opinions of authors reſpecting the nature of fever, we have ſeen, are almoſt infinitely various: yet all have noticed the diſorder of the *nervous ſyſtem*, as among the moſt ſtriking phenomena of the diſeaſe. This, it appears to me, can only be underſtood in reference to the brain: for what organ but this is capable of influencing ſo materially the whole nervous ſyſtem? There is, in fact, no part but the brain which could excite ſuch general diſorder in the ſyſtem as we find to take place in fever*.

Some have aſcribed the pain in the head and the diſturbance of the ſenſorial functions, which are ſo commonly obſerved in fevers, ſimply to increaſed determination of blood towards the head, without any proper inflammatory action. But the admiſſion of ſuch a local determination of blood is of itſelf no ſmall proof of the doctrine contended for; ſince it is obſerved to accompany all other inflammations.

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* "When the brain is wounded, inflamed, ſuppurated, or otherwiſe hurt, almoſt every part of the body is liable to ſuffer, and vomitings, tremors, convulſions, often enſue."—*Whytt's Works*, 4to, p. 493.

That the diſordered ſtate of the brain in fever does not depend upon the general increaſe of vaſcular action in the ſyſtem, is very certain; becauſe in acute rheumatiſm, and ſeveral other inflammatory diſorders, the blood circulates with much greater violence than in fever, without being attended by any headach or other affection of the brain. Indeed, the diſorder of the ſenſorium is always moſt conſiderable in thoſe caſes of fever where the general vaſcular action is the moſt depreſſed.

In regard to the *cure* of fever in relation to the preſent doctrine, I have endeavoured to ſpeak with due caution. I have recommended no remedies with confidence, upon merely theoretical grounds, but have contented myſelf with hinting only at their probable utility; well knowing how fallacious every thing of this kind is, and how ready we are to diſcover virtues where we wiſh to find them.

I have no heſitation, however, in expreſſing my firm belief, that the effects of the remedies, whoſe powers in the cure of fever are well aſcertained, will be better underſtood, and the application of them be rendered more preciſe and beneficial, upon the preſent doctrine, and by keeping always in our view the ſtate of vaſcular action in the brain, than upon any other hypotheſis that has yet been given reſpecting the ſeat and nature of fever.

It has been ſatisfactorily ſhewn, I think, both by the progreſs of the diſeaſe and the effects of remedies, that debility is not a *primary* ſymptom in fever, but a conſequence merely of the deranged ſtate of the brain; and therefore that it can never make a primary object of conſideration in practice. Were it otherwiſe, bloodletting, which has ſo often put an immediate ſtop to the courſe of fever, muſt in every inſtance have proved fatal.

I have not found it neceſſary, in order to ſupport my own opinion, to call in queſtion the alleged facts of different authors with regard to the effects of remedies, though theſe have been often of the moſt oppoſite deſcription. Bloodletting and other evacuations, *bark*, ſtimulants, mercury, heat and cold, are not, according to my conception of the nature of fever, at all incompatible with one another as remedies for fever, nor with the doctrine here advanced; due allowance being made for time of adminiſtration, degree, conſtitution, and various other circumſtances. That we ſhall hereafter better underſtand the particular circumſtances in which each is applicable, and thus facilitate the cure of the diſeaſe, I confidently hope and expect.

If fever is to be cured ſpeedily, and not ſuffered to run its courſe, it can only be done by means which produce a powerful impreſſion on the general ſyſtem. And it ſeems, in ſome meaſure, indifferent of what nature the impreſſion is, provided it be ſufficiently powerful. Some ſtrong counter-movement muſt be made, ſuch as tends to alter all the circumſtances of the habit: and it may take place either through the mind or through the body. It is, however, indiſpenſible to ſucceſs, that the attempt be made very early in the diſeaſe: at a later period, it may at once fail, and prove injurious.

If it be certain that fever conſiſts in inflammation, as I have attempted to prove, a great uſe may be made of our knowledge of the fact in regard to *prevention*. It will then become a material object in practice, when fevers are epidemic, or perſons are more than uſually expoſed to their attack, to leſſen, as far as poſſible, the prediſpoſition to inflammation in the ſyſtem, ſo that the exciting cauſes ſhall not produce ſo great an effect.

This conſideration is of the greateſt moment, perhaps, on approaching the torrid zone from colder climates. In ſuch caſes, abſtinence, bloodletting and other evacuations, by reducing the tone and activity of the vaſcular ſyſtem, render the body leſs diſpoſed to fevers and inflammations, the great ſource of mortality to new comers. By ſuch a preparation, the conſtitution becomes aſſimilated in a certain degree to that of the natives and thoſe who have reſided long in hot climates.

This ſuggeſtion is not recommended by any novelty—it has, in fact, been made and acted upon in various inſtances already mentioned, with the beſt effects. Yet the practice is much leſs general than it ought to be, from the principle of it not being ſufficiently underſtood.

An inability and diſinclination to great muſcular exertion being commonly obſerved in the inhabitants of hot climates, it has been ſuppoſed that the effect of heat was to produce ſimple weakneſs or inaction in the ſyſtem. Hence it has been thought, that a rich animal diet and the uſe of ſtrong drinks were wanting to rouſe the ſyſtem to greater activity, and to counteract the debilitating effects of the climate. This perſuaſion has operated, and ſtill operates, to a great extent, on the minds of Europeans, to the annual deſtruction of thouſands. It has been inculcated alſo by medical men, from miſtaken theory, and the pernicious influence of the maxim has been, by this means, more widely diffuſed. It is in particular a favourite doctrine with Engliſhmen, who, from being accuſtomed at home to all the luxuries of the table (with impunity as to their immediate conſequences), transfer without heſitation their notions on the ſubject to all parts of the world. And they have, in conſequence, ſuffered proportionally more from the effects of climate, than almoſt any other people.

However debilitating hot climates are to the *muſcular* ſtrength of the body, it is certain that the *vaſcular* ſyſtem, which is the great ſeat of diſeaſe, is excited by no agent ſo readily as by heat. The diſeaſes of hot climates are, almoſt univerſally, inflammations, which proceed with inconceivable rapidity to a fatal termination.

I ſhall proceed, in the Second Part of the Work, to apply the doctrine to the different varieties of fever and their treatment; and ſhall, I truſt, be able to bring forward ſtill more ſatisfactory evidence of its truth than has yet been offered.

END OF THE FIRST PART.

Knight and Compton, Printers,
Middle Street, Cloth Fair.

# TO MATTHEW BAILLIE,

M. D. F. R. S. &c.

*Dear Sir,*

*BY inscribing the following Observations to you, I should only signify the sentiments of respect and esteem with which every one must be impressed, who has had an opportunity of witnessing the candour and liberality of your professional conduct.*

*But I must acknowledge that I am actuated by another and less disinterested motive; and that, whilst I solicit your sanction of my endeavours to exhibit what, I trust, you will find a faithful view of one of our most efficacious remedies, I am not insensible to the hope of obtaining, by the influence of your name, a degree of attention to my little work beyond any claim I can advance, independent of the importance of it's subject.*

*I am,*
*Dear Sir,*
*Your most obliged and*
*Most faithful Servant,*
*WILLIAM HAMILTON.*

*Bury, August 10th,* 1807.

# ADVERTISEMENT.

The cases of Hydrothorax contained in the Appendix (No. I.) lately appeared in a Periodical Journal; but the plan of that work required that they should be reduced within narrow limits, and necessarily precluded the consideration of many subjects connected with a general view of the Digitalis.

This is now attempted in a separate and distinct form; and a Sketch of the Medical History of this powerful plant is prefixed, which, it is hoped, will not be found without general interest; while, to the younger Practitioner it may convey some information, and prevent the necessity of consulting many scattered publications.

In this volume the cases are confined to Hydrothorax; and these would have been more numerous, had the Author not been restrained from narrating some interesting examples of this disorder, which have lately occurred; and in which the Foxglove completely succeeded.—Confidence in the perfect accuracy of Medical Reports cannot be demanded, if the name and residence of the patient, or of the Practitioner concerned in his treatment, is withheld. In private practice this evidence cannot always be adduced, without the risque of injuring the feelings of individuals; more especially if it is probable that they may be wantonly exposed before the public at large, to gratify the local ends of a captious hypercritic; in every other point of view impotent; and in regard to science, entirely unworthy of notice. The silence thus imposed upon the Author has also deprived his readers of a most interesting and instructive case of Consumption, from the repeated attacks of which his patient, contrary to the opinion of the first Physicians, has been restored to perfect health by the use of Digitalis.

The cases and observations in the Appendix (No. II.) furnished by Dr. MACLEAN, of Sudbury, will be found highly valuable on their own account. To the Author of this volume they are peculiarly gratifying, insomuch as they confirm the opinions and conclusions drawn from his own experience: And they are calculated to prove of very superior advantage to his readers, by exhibiting a mode of practice in Hydrothorax, somewhat different from that which he has had occasion to adopt, and which may be resorted to, should his more simple plan of treatment be found inefficacious. These observations, added to those given at page 91 et seq. upon the "Exhibition of DIGITALIS," will, it is hoped, leave the reader little room to wish for any addition to the directions for the administration of diuretics.

To his friend Dr. MACLEAN the Author begs to offer his best thanks for these excellent cases and observations; and he trusts that he will soon find leisure to complete his intended work on Hydrothorax; which, he ventures to assert, will prove a most acceptable present to the Faculty.

How far, and after what manner, the Author has fulfilled the task he had imposed upon himself, remains for the determination of others. The facts stated, and the opinions formed, are founded upon experience alone; and, if he shall prove sufficiently fortunate to excite the attention of Medical Men to a sober, guarded, and effective use of the DIGITALIS, in those diseases to the cure of which it's powers are adapted, he, therefore, confidently expects that it will be found fully to justify what he has advanced in it's favour.

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## ON THE UTILITY AND ADMINISTRATION OF DIGITALIS, &c. &c.

* * *

### *Introductory Observations.*

THE History of the Materia Medica affords abundant examples of the temporary celebrity, and subsequent neglect, of many of it's articles: nor is this fact difficult of explanation. The hopes of improving our art, and of affording relief to the afflicted, together with the love of novelty, have at all times disposed physicians readily to admit new remedies; and they have generally had little room to complain of their reception. Stamped with the partial characters of their discoverers, or early patrons, they have at once been received into use; and their pretensions were not decided upon, till after a full and complete trial of their virtues and qualities. But this candid examination few of them were found able to undergo. They often proved altogether inert, or at best unequal to effect the purposes for which they were intended; and they were consequently either discarded from practice entirely, and suffered to continue to swell the lists of obsolete and ineffective drugs, or still only resorted to occasionally as auxiliaries to more powerful agents. Many of them indeed have again been offered to notice, with a revived account of their powers over the diseases in which they were originally recommended, or for some new and, till then supposed, undiscovered uses. A repetition, however, of the circumstances that attended their first introduction, or their own demerits, again consigned them to oblivion*.

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* Is it yet premature to adduce as examples the renewed use of Taraxacum in supposed Schirrhus of the Viscera, and of Lichen Islandicus, and Uva Ursi, in Consumption?

It is greatly to be wished that the eminent bodies appointed to regulate our Pharmacopœias would deign to take this important subject into their consideration. The really efficacious and useful medicines to be found in the extensive lists that at present form the Materia Medica, might probably be comprised within a comparatively narrow space; and as simplicity in prescription is fortunately now become common, it would in a great degree facilitate the study of this important branch of medicine, were the superabundant articles expunged.

To these observations, the Medical History of the Digitalis will form some exception. It has indeed been sufficiently commended, and even extravagantly praised; and to the high-wrought encomiums that have been lavished upon it at various times, no doubt much of it's temporary loss of fame and neglect has been owing. But it had, in it's progress to the important station among the means of curing diseases that it is entitled to occupy, more serious obstacles to encounter than it's failure to realize the hopes of it's admirers. For with powers sufficient to cause highly dangerous effects when injudiciously administered, it was for the most part given in a state of preparation that rendered it entirely inert. It was consequently often found ineffective, whilst it sometimes produced violent symptoms; and it's exact management being little understood, and the directions for it's preparation and use not duly attended to by many who prescribed it, there is no room for surprize that to some it became an object of terror, and to others of indifference; or, that the few who had carefully observed it's administration and effects, should be delighted with the powers which it is often found capable of exerting.

Thus it appears, as is observed by Sir Geo. Baker, "that the fortune of Foxglove in the "medical world has been various. At one "time it has been esteemed to be a powerful "remedy: at another time it has been utterly "rejected as a plant, totâ substantiâ venenosâ. "It is probable that a few fortunate experiments might bring it into a temporary "vogue; and it is as probable that other experiments less fortunate might afford a "sufficient foundation for it's disuse*." Indeed the difference of opinion entertained by Medical Authors and Practitioners upon this subject, is altogether extraordinary: and can only be accounted for, by supposing that much attention cannot have been paid to procuring the plant in a state always possessing equal powers—to a want of accurate observation of it's effects—or, to it's having been frequently given in diseases altogether unadapted to it's use.

In order to obviate the difficulties that must follow the exhibition of this powerful medicine in an unequal degree of strength,

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* Appendix to Dr. DARWIN's Paper on the successful use of Foxglove. Medical Transactions of the College of Physicians, vol. 3d, page 301.

Dr. WITHERING directed the leaves to be gathered and carefully dried, when the flower stem had shot up; and when they might invariably be depended upon to produce the same effects. The leaves thus collected were given in powder, or an infusion was made from them; and to Dr. DARWIN we are indebted for the saturated tincture,--a mode of preparation highly advantageous, when powerful remedies are required. These forms are fully adequate to the attainment of every advantage that can be expected from the use of this plant.

Dr. WITHERING's directions seem, however, not to have been attended to, even in the first trials that were made of the DIGITALIS. He complains of the unrestrained manner in which it was exhibited at Edinburgh, previous to it's admission into their Pharmacopœia in 1783; and, of the enormous doses in which it was directed in London. I conceive this inaccuracy to have been occasioned by want of attention to it's preparation.

The DIGITALIS cannot be given in *enormous* doses with impunity, if it retains activity: and, in this state, a little experience would have taught the Edinburgh and London Physicians it's proper management. It may, therefore, be presumed that they employed (as is commonly done at a distance from the districts where this plant is naturally produced) leaves possessed of very inferior power; and which are, notwithstanding what has been written upon this subject, usually obtained from the druggists in bundles, tied up together when green, and become mouldy. Those who expect any benefit from such preparations will find themselves entirely disappointed*.

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* "When I first entered upon the use of the plant [the "DIGITALIS] in Consumption, I did not even entertain "a hope that it would afford relief. I disbelieved it's "efficacy; and the issue of the first cases in which I "prescribed it, confirmed my sceptism. My patients "perished! The failure I now ascribe to the circum-"stance of the plant being of a bad quality, since it's "prominent effects were never apparent. Indeed I have "the strongest conviction, that a want of due attention to "the *quality* of the DIGITALIS, and to the *quantity* ad-

To this it may be attributed, as well as to the inefficient doses in which it is often given, if it really have power, that many practitioners continue to exhibit DIGITALIS, and to flatter themselves that it is highly beneficial, in cases where it can have no good effect; and that it thus obtains the credit of cures, to which it has no pretensions whatever. It has thus also happened in many cases where I have witnessed the very best effects from this remedy, that I was assured it had previously experienced a full and complete trial.

Some of the most esteemed Authors of the present day have attributed powers to the DIGITALIS, especially over the circulation, far beyond what I apprehend it will be found to possess; and have thus caused it to be resorted to in inflammatory disorders, in which it is desirable to restrain the increased activity of

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" ministered, is the principal source of medical disagree-
" ment relative to it's powers."

Dr. MOSMAN's Paper on Consumption,
Medical and Physical Journal, vol. 3d, p. 311.

the vascular system; as well as in general fever, in which I am informed that it is still frequently employed with this view, and esteemed highly beneficial*.

Of it's supposed influence upon inflammatory diseases, and of it's power in superseding the use of the lancet, I shall hereafter have occasion to treat: In regard to general fever it may here be sufficient to observe, that while the cause producing this disorder continues to act, I apprehend little effect will be obtained in retarding the velocity of the pulse by the use of the DIGITALIS: and, that even were this effect constantly and certainly to be depended upon, it is doubtful whether this alone would suspend the febrile action, or diminish the violence of the other symptoms. Indeed we sometimes see fever pursue it's whole course with but little increase of vascular action; and I can have no hope that DIGITALIS will do more towards cutting short it's progress, than all the other remedies with which we are acquainted, the affusion of water alone excepted; whilst in such disorders I should greatly fear the injury that might be sustained by the debilitating effects of this medicine.

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* Medical and Physical Journal, vol. 4, page 309.

But although the exhibition of DIGITALIS is often, from it's supposed universal power over the circulation, extended to other diseases in which it's utility may be doubtful; it has for the most part been confined to the relief of dropsical affections, and, of late years, to cases of Consumption. In the former, especially in Hydrothorax and Anasarca, I believe it will be found, when given with due attention, fully deserving the opinion entertained of it above 20 years ago, by Dr. WITHERING; namely, "that it acts more certainly as a "diuretic than any other medicine; and that "if this fails there is but little chance of any "other medicine succeeding*." Yet, the circumstances above alluded to, have even in these disorders prevented it's being received into general use; and Hydrothorax has consequently acquired a character of dangerous tendency, which it only deserves when connected with organic disease, or with the general decay of the strength of those afflicted by it.

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* WITHERING on Foxglove, page 191.

This is indeed, both by medical men and the public, commonly considered as a disorder in which little can be effected. And if the DIGITALIS, which alone appears to exert decided influence over it, is sometimes given, there is ground for fear that it is seldom pushed to it's proper extent, or persisted in till it's beneficial influence be produced. I am acquainted with no work, of a later date than Dr. WITHERING's, where we find it PARTICULARLY recommended in this species of dropsy, except an excellent paper of Dr. MACLEAN's*; and few of our latest Authors even mention it. In the mean time the treatment of Hydrothorax is often conducted upon different views; or perhaps, from the generally received idea of it's danger, less is attempted towards it's cure than in other cases of dropsy: "Since, to pronounce diseases "incurable, is to establish negligence and "carelessness as it were by law*." And thus like many other predictions, the fatal prognostic in this disease is made to work it's own accomplishment†.

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* Medical and Physical Journal, vol. 4, page 127.

That a collection of water in any of the cavities within the chest, must constitute a

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[*] Bacon de Augmentis Scientiarum, S. ix.

[†] A Gentleman under 40, after suffering severely from Gout, "found his breath become short at night, and his "strength much impaired; and at the end of a fortnight "the breathing became so difficult at going to bed, as to "require his being propped up in a sitting posture every "night.—He now applied for medical aid; when his "pulse being found to be very low, and he exceedingly "weak, and no shortness of breathing taking place in the "day-time, a blister was applied between the shoulders, "and various antispasmodics and expectorants were tried "for a few days without success. He was then bled, and "lost about five ounces of blood, from which he experienced very great relief to his breathing; but, at the "same time, suffered a considerable farther prostration of "strength. In about four or five days, the shortness of "breathing returning to as great a degree as before, it was

disease of great danger, by impeding the action of organs essentially necessary to life, cannot be denied. And it is equally obvious that such a disorder, if not removed, must soon prove fatal. But, that this desirable object may be obtained by the proper use of the DIGITALIS, experience, by which alone I presume to be guided, will not allow me to doubt. For since I adopted the effective use of this medicine in such cases, I have never seen one, however advanced or desperate, that was not speedily relieved by it. Indeed it has, in such distressing instances, appeared possessed of powers infinitely beyond what could have been hoped for from any medicine whatever; and almost approaching to certainty of effect.

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" proposed to take away three or four ounces of blood, by " cupping, from the chest. But although the shortness of " breathing was exceedingly distressing, yet he begged to " avoid the loss of more blood, confident that, although " it might afford him temporary relief, the exhaustion of " his strength would be irreparable. All that was pre" scribed by the eminent Physician who had first seen him, " as well as by two others, proved ineffectual, and within " six weeks he sunk, *overcome by the accumulation of water* " *in the chest.*" PARKINSON on Gout, p. 63.

It will not surely be objected to the DIGITALIS, that Hydrothorax is apt to return after a cure has been performed by it's use; or that, in worn-out and entirely exhausted habits, it is incapable of prolonging life beyond a certain period. Indeed this disease unfortunately does often recur; and if the habits that at first produced it are persisted in (which too often happens) whilst old age is advancing, this is naturally to be expected. By some of the cases, however, in the Appendix (No. 1), it will be seen, that the DIGITALIS retained, and continued to exert as long as it was resorted to, the full powers by which it's use was originally manifested; and that until the patients were carried off by other disorders, or neglected to apply for this medicine, a few doses of it only invariably relieved their symptoms. The influence, therefore, which this plant still continues to exert upon dropsical affections of the chest in particular, after it has repeatedly been employed with success, which we rarely experience from other remedies, is an additional and very essential recommendation; as it always enables us to keep our patients free from the accumulation of water, whilst our endeavours are directed to restore the general strength, and to break the force of pernicious habits, or to counteract their effects.

In Consumption, DIGITALIS has been recommended by Authors upon two distinct views. Some have proposed it as a means of exciting the absorption of matter from ulcers in the lungs as rapidly as it became secreted; and thereby, of promoting the healing of these ulcers. And others have extended their views to it's power of retarding the velocity of the pulse; and consequently, of preventing the growth of new and morbid parts, and restraining the secretion of Pus by diminishing the supply of arterial blood;—at the same time that absorption was increased.

In this disease, the prognosis may with tolerable accuracy be formed from the rapidity of the circulation; there can, I presume, therefore, be little doubt that it would very frequently be cured by the DIGITALIS if it possessed the power of reducing the pulse to a given standard; and of steadily maintaining it there for almost any length of time, as some Authors have asserted, without derangement of the other functions. For no nausea or sickness being produced, sufficient sustenance would be taken, and the strength repaired, or at least kept up; and time would thus be given to counteract unhealthy actions, and to impede the progress of disease. And it will, I am assured, be found in practice, that every case of Consumption, however advanced, is essentially benefited; and that in affections more recent, the advances towards it's commonly fatal termination will often be suspended, and sometimes entirely stopped, by the exhibition of this remedy, *where it can thus be got to act.* But I fear we shall be greatly disappointed if we often expect this effect of DIGITALIS in Consumption. In a great majority of the patients for whom I have prescribed it in this disease, in saturated Tincture, and in the most gradually increased doses; I have been compelled to abandon the use of it before the circulation could be reduced, from nausea—loss of appetite—affections of the head and sight;—or from it's generally debilitating consequences*.

This difficulty of managing the DIGITALIS in such manner as generally to cause the reduction of the circulation in Consumption, depends upon circumstances connected with the nature of the complaint itself, which cannot, I fear, be controuled; and I am therefore compelled to conclude that the admirers of the plant, in attributing to it this effect, have greatly over-rated it's powers. Were this observation incorrect, we should not in so many instances have to deplore the still almost uniform fate of our consumptive patients.

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* Some of Dr. BEDDOES's patients could not take even a single drop of the Tincture, three times a day, without disagreeable effects. See Mrs. FINCH's case, &c.

BEDDOES on Consumption, Digitalis, and Scrofula.

Physicians of the present day seem to have abandoned, by mutual consent, the vain and profitless toil of speculative theories, by which the phenomena of health and disease might be generalized and explained; and have wisely directed their attention to a diligent enquiry into facts. In a period, therefore, distinguished by these enlightened views, to endeavour to rescue a remedy of such extensive power as that of the DIGITALIS over some of our most formidable diseases, from it's present doubtful character—to collect under one distinct view, and attempt to reconcile the contrariety of opinion that at present prevails respecting the use of this medicine—to ascertain, as far as our experience will permit, the diseases in which it may really be expected to produce beneficial effects—and to give such an account of it's preparation and mode of exhibition as may render it as invariably to be depended upon, as the nature of the diseases to which it is adapted, and the ever-varying state of the human body, will admit;—cannot, I trust, prove an entirely unacceptable and unprofitable labour; especially as Dr. FERRIAR's pamphlet (Cadell, 1799) is the only separate work that has appeared upon this subject since the publication of Dr. WITHERING's book, now out of print. For although it must be allowed that the administration of this remedy is little suited to the practice of those who have no leisure to observe it's effects with attention; or, who dread nothing so much as exciting an uneasy sensation in the stomachs of their patients; yet to such as are truly interested in the welfare of those entrusted to their care, and who are anxious for the promotion of the utility of our profession, it will most amply repay the attention it demands, in common with all other powerful, and consequently useful, medical agents.

Of the importance of his subject, therefore, the Author is satisfied. But, although his experience has been considerable, and he is not conscious of having neglected any opportunity of observing the effects of DIGITALIS upon the diseases in which he believes it useful ; he still fears there may appear sufficient cause for regret, that an account of the properties of this singular and powerful plant did not fall into more able hands.

# SKETCH
OF THE
# MEDICAL HISTORY
OF THE
# DIGITALIS.

FROM the time of FUCHIUS, who described the DIGITALIS in 1542, till by good fortune it fell into the hands of Dr. WITHERING about the year 1775, little seems to have been certainly known of the properties and effects of this medicine; and many different and opposite qualities were by the older writers ascribed to it.

The power of curing Epilepsy of long standing, Scrofula, Ulcers and Wounds, Caries of the Bones, old Coughs when the chest was loaded with tough and viscid phlegm, and

Consumptions, &c. &c. was attributed to this plant; whilst the diuretic power, by which it is most distinguished, was entirely overlooked.

To detail an account of opinions so vague and uncertain, would be useless: I shall, therefore, commence the Medical History of DIGITALIS with the period when Dr. WITHERING, to whom alone we are indebted for our knowledge of the virtues of this medicine, introduced it into practice.

In the year 1775, Dr. WITHERING was asked his opinion concerning a family receipt for the cure of Dropsy, which produced the effects of violent purging and vomiting. It consisted of DIGITALIS, together with many other herbs, but although no diuretic effect had been observed, it was evident that it's efficacy could only be derived from this plant. In consequence of this relation, the Doctor was induced to make trial of it in the cases of dropsical patients who applied to him for relief; and he soon discovered that it possessed very extensive powers as a diuretic: opportunities also occurred to him of ascertaining that it sometimes produced the extraordinary effect of reducing the frequency of the pulse to 40 strokes in a minute. It was therefore continued in Ascites, Anasarca, Hydrops Pectoris, &c. &c. in all of which disorders great benefit was experienced from it; and so highly did Dr. WITHERING estimate it's powers, that he says, "So far as the removal of the water "will contribute to cure the patient, so far "may be expected from this medicine*."

In 1779, Dr. STOKES communicated to the Medical Society of Edinburgh the result of the experiments that had been made at Birmingham; and it was consequently prescribed in the Infirmary there with great advantage. This success was also reported by Dr. WITHERING to several respectable practitioners in London, &c. who availed themselves of the powers of the DIGITALIS; and many excellent cases, in which it's use was manifested, were thus communicated to him, and afterwards recorded in his work.

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* WITHERING on FOXGLOVE, Introduction, p. 6.

Dr. DARWIN, who had in this manner become acquainted with the DIGITALIS, published in the year 1780, in a note to Mr. CHARLES DARWIN's posthumous work *, some cases of "Anasarca of the Lungs, Hydrops Pericardii, Hydrops Thoracis, and Ascites," in which he had prescribed it with considerable advantage. This may be considered as the first modern publication upon this plant.

About the same period also it appears that Dr. WITHERING was induced to make trial of the DIGITALIS in Consumption; in consequence of having heard that in the West of England it was much used by the common people in such cases; and, from the authority of a manuscript note, written by a Mr. SAUNDERS, a practitioner in Worcestershire,

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* Experiments establishing a Criterion between mucaginous and purulent Matter, p. 103.

and found in a copy of PARKINSON's Herbal*. The extravagant encomiums lavished upon it in this disorder also, by SALMON†, and the experience of it's efficacy in Dropsy, to which Dr. WITHERING was first led by popular report, would readily dispose him to prescribe this remedy in a disease so generally fatal. But in Consumption it was given without a view to any determinate object, and accordingly it proved inefficacious. Dr. WITHERING observes of it's administration in this disease, "If the Digitalis is no longer useful in con-"sumptive cases, it must be that I know not "how to manage it, or that the disease is "more fatal than formerly." He, however, wished a farther trial to be instituted, "and "that others would undertake the enquiry, "as it would be hard to deny the testimony "cited at page 9*."

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* "Consumptions are cured infallibly by weak decoction of FOXGLOVE leaves in water, or wine and water, and drank for constant drink; or, take of the juice of the herb and flowers, clarify it, and make a fine syrup with honey, of which take three spoonsful thrice a day, at physical hours. The use of these two things of late has done great wonders in consumptive cases. But be cautious of it's use, for it is of a vomiting nature," &c. &c.

† "It is a specific which transcends all other vegetable medicaments for the cure of Consumptions; cleansing and healing after an admirable manner Ulcers of the Lungs."—"This medicament has restored (when the patient has not been absolutely past cure) beyond all expectation."—"I have known it do wonders, and speak here from a long experience. Persons in deep Consumptions, and given over by all Physicians, have been strangely recovered, and so perfectly restored as to grow fat again," &c. &c.

SALMON's BOTANOLOGIA.

In 1785, after an experience of ten years in the use of this medicine, Dr. Withering published his excellent account of the Digitalis. It is written with unaffected modesty, and great candour; and enriched with numerous cases which fell under his own observation, or were communicated to him by the respectable practitioners to whom he had made known the virtues of this remedy. And it contains such sound and accurate practical remarks and inferences, drawn from the pure sources of observation and experience, that had they been attentively considered and acted upon, all doubt respecting it's efficacy would have soon subsided; and all contrariety of opinion with regard to the operation and effects of this remedy, would have been speedily reconciled.

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* Withering on Foxglove, p. 205.

This valuable work is now out of print; I have therefore copied from it many of the directions for the use of this plant, and such practical remarks and precautions derived from Dr. WITHERING's experience, as appear most likely to prove useful, "without the strictest "attention to which," as is observed by Dr. CURRIE, "no practitioner should prescribe "this singular and powerful medicine*."

About the same time also appeared Dr. DARWIN's Paper, in the Transactions of the College of Physicians, containing an account of the successful employment of DIGITALIS in some dropsical affections; and one well marked case of Consumption, wherein it appeared to have performed a complete cure. And this Paper is remarkable, as it affords the first instance in which the DIGITALIS was prescribed in Consumption, with a view to any distinct object. " No Ulcer," Dr. DARWIN observes, " can heal so long as the secretion " or deposition of fluids into it is greater than " the re-absorption of them. For so long " there must be an oozing, or discharge from " it; or, in other words, it will continue to " be an open Ulcer. Now as the decoc- " tion of FOXGLOVE seemed so powerfully to " produce the absorption of the hydropic fluid " from the chest; and as no remedy yet dis- " covered can be depended upon for the pur- " pose of healing Pulmonary Ulcers, I wished " to give it a fair trial in this calamitous " disease*." With this view the DIGITALIS was given in decoction, and continued for several weeks; and the patient at length, " hav- " ing persisted the whole time in the use of

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* Medical Reports, vol. 2d, p. 420.

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* Medical Transactions, vol. 3d, p. 275.

"the medicine, occasionally varying the dose "from half an ounce to an ounce twice a day, "was perfectly restored *." It does not appear that any considerable reduction of the pulse was effected; although it gradually became slower as the patient advanced towards recovery.

To this Paper an Appendix is added by Sir GEORGE BAKER, containing some cases of Dropsy in which this remedy had been useful, with many judicious observations upon them.

It might have been expected that these candid publications, by Physicians of the first eminence, would have attracted great attention to a medicine able to produce such beneficial effects, in a class of disorders at all times so intractable and dangerous as Dropsies; and which, on the authority of one well authenticated instance at least, seemed even to have performed a cure of Consumption. And that

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* Medical Transactions, vol. 3d, p. 275.

the cautious but effective use of this plant would have become general. But this either seems not to have taken place ; or, on account of the circumstances already mentioned (p. 7 et seq.), any trials instituted with a view to ascertain it's powers, were soon abandoned. They at least produced no public benefit, and for several years after the appearance of these works, the DIGITALIS seems to have been almost entirely neglected.

Dr. FERRIAR, of Manchester, was the first Physician who entertained distinct views of the advantages likely to be derived from DIGITALIS, by it's power of retarding the rapidity of the circulation, in diseases of increased vascular action : And to him and to Dr. DARWIN we are therefore justly indebted for all our useful knowledge of the application of the extraordinary effects of this plant to the cure of Consumption, &c. The exuberance of fancy indeed, or the love of singularity, may have suggested theories by which their Authors have endeavoured to account for the action of this remedy, upon grounds different from those proposed by these eminent Physicians; and even independent of the effects upon which their hopes of success were founded*. But such speculations, even when they possessed the advantage of being intelligible, have been productive of little profit. Indeed, the extraordinary and apparently opposite qualities of this plant, places peculiar difficulties in the way of such as are fond of attempting the unavailing labour of explaining the peculiar mode of action of different remedies.

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* Founding, then, the modus operandi of DIGITALIS on it's stimulating efficiency in invigorating the arterial and muscular energy of the system;—denying that, in retarding the morbid frequency of pulse, it reduces the force of arterial action;—and refusing contractility, or an independent absorbing power to the lymphatics;—it may be presumed that an adequate explanation of it's mode of action may be afforded by considering it as a powerful narcotic stimulant, capable of impressing the stomach with additional motive energy, which, through associative influence, is propagated over the system, and more particularly exerted on the heart and arteries, by which are distributed to every part of the frame an increased quantity of oxygenous and other vital principles, which may be necessary to retrieve and establish, both locally and generally, the healthy conditions of life.

Cases and Observations on the Efficacy of DIGITALIS in Consumption, by Dr. KINGLAKE.

Appendix to BEDDOES on Consumption, DIGITALIS, &c. p. 65.

In the first volume of Dr. FERRIAR's Medical Histories and Reflections, which was published in 1792, are contained four cases of active Hæmorrhage from the Lungs, in which the DIGITALIS produced decided benefit. It was given in infusion and in gradually increased doses; and in all these cases it effected the reduction of the pulse, with which view it was prescribed. In this volume also are detailed twenty-four histories of Dropsy, in about one half of which the DIGITALIS proved efficacious; several of the others were not relieved by any medicine afterwards prescribed; and some of them laboured under organic disease. The diuretic and narcotic effects of this plant suggested it's use to Dr. FERRIAR in Mania also, but "it never sus-
"pended the appearances of insanity for a

"moment," although it was made to excite nausea.

The second volume of this useful work, which appeared in 1795, contains also several cases of dropsy: but the result of Dr. FERRIAR's experience was not very encouraging; and particularly in this volume, from whatever cause, his success was perhaps inferior to what may generally be expected from the exhibition of this remedy in dropsical cases, by so accurate an observer. The result of his practice with this medicine, taken from a review of the cases in both volumes, is thus estimated:— "DIGITALIS has been given in twenty-nine "cases, of which eleven were cured; seven "died; two were relieved; and nine were not "relieved.—While Cream of Tartar succeeded "in thirty-three cases, out of forty-three." In this volume there is no account of the exhibition of the DIGITALIS in diseases of increased activity, except what is contained in a note at p. 18.—"I have repeatedly stopped "the progress of incipient Consumptions, by

" administering this remedy, when the patient " was too much weakened by preceding disease " to bear the usual methods of lessening the " impetus of the circulating system."

In the third volume, which was published in 1798, this medicine is not mentioned.

The Memoirs of the Medical Society of London, for the year 1795, contain a Paper upon the DIGITALIS, by Dr. CURRIE, of Chester, who observes, that this plant is to be reckoned amongst the sedative poisons; he therefore condemns it's use in hydropic affections, which generally originate from debility, and are commonly accompanied by it. The sedative and debilitating effects of this plant, however, point it out in his opinion, as an useful and powerful remedy in cases of increased tone, with great irritability of the nervous and arterial systems. He states that he has accordingly employed it with success in several cases of Mania, and in two of Hæmorrhage*.

From this time, until the publication of Dr. BEDDOES's Contributions to Physical and Medical Knowledge, in 1799, the DIGITALIS appears again to have been overlooked. Dr. DARWIN indeed (Zoonomia, vol. 2d, p. 291), mentions it's use in Consumption, but with little commendation; and he informs us that the case related in the Medical Transactions, and supposed to have been cured by this medicine, ended fatally. He here also recommends it in dropsical affections. This celebrated Physician, however, seems not to have retained his former partiality for the remedy, from which, in effusions of water into the cavities of the chest especially, he had formerly experienced such decided benefit: for he asks, speaking of Hydrops Thoracis, "Is "it ever cured by making the patient sick by "tincture of DIGITALIS?" It may indeed even be questioned, whether Dr. Darwin continued to prescribe this medicine in his practice; the doses he advises (from 30 to 60 drops of the saturated tincture) being far beyond what can be endured by almost any person, altho' the most gradual introduction of this preparation into the system has been adopted.

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* Memoirs of the Medical Society of London, vol. 4, art. 2d.

The Digitalis, however, was soon fated to experience a different reception, and to enjoy, for a time at least, a degree of confidence far beyond what it had hitherto acquired. Dr. Withering, and the other respectable writers who, about the same time, treated of this plant, candidly related the whole of their observations upon it, and consequently recorded many instances in which it had failed; and these, although unequal to counterbalance the good effects of this remedy in many dangerous disorders, retarded, nevertheless, it's progress to general employment; and prevented many, who might also apprehend the deleterious effects it sometimes produces when injudiciously administered, from any attempt to use it.

But the publication of the Western Contributions suspended all reasonable doubts of the efficacy of the DIGITALIS, and banished every degree of moderation from the hopes of many practitioners who enthusiastically espoused it. According to the sanguine expectations thus excited, Consumption, even when advanced into the last stage, was, by the agency of this remedy, to become almost entirely subjected to our controul, and was thenceforward to rank in danger, only amongst the least formidable disorders; whilst it's progress was with certainty to be impeded, and it's approaches prevented. Nor were the extraordinary and almost supernatural powers of this plant to be confined to the cure of Consumption alone; the universal influence it was supposed capable of exerting over increased vascular action, promised to render it an effectual remedy in all diseases of inflammation, or, accompanied by fever; and it was consequently to supersede the use of the lancet, and to prevent the future necessity of all such debilitating processes*. Unfortunately these brilliant prospects have been seldom realized.

This work appeared in 1799, and contained two Papers on the cure of Pulmonary Consumption by means of DIGITALIS, written without any knowledge of the intentions of each-other, by Drs. DRAKE and FOWLER. Yet, these eminent Physicians seem to have adopted this remedy upon nearly the same grounds, suggested by the observations of DARWIN and FERRIAR.

The publication of these Papers forms a new æra in the History of the DIGITALIS; and, as his views of the probable effects of this medicine upon the symptoms of Consumption are given with great clearness and precision by Dr. DRAKE, it will be equally gratifying and instructive to quote them, at some length:—"As every Physician is supposed maturely to "weigh his motives for the administration of "any medicine; and to form some theory of "it's operation at least, and probable effects, "it may not be unnecessary in this place "briefly to state my views in prescribing this "plant in cases so apparently desperate."

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* "I am now fully persuaded, that, by a judicious management of the plant, variously combined, I can obviate *pneumonic inflammation with as much certainty as I can arrest the progress of an intermittent fever by means of the bark of the Cinchona.* Again, I am persuaded, that, *if Pulmonary Consumption be divided into four stages, the Digitalis will very certainly cure the three first, and as certainly alleviate the distressing symptoms of the last.*"

Medical and Physical Journal, vol. 4, p. 309.

"It has been lately maintained by the most "celebrated physiologists, among whom JOHN "HUNTER stands foremost, that Pus is a "secreted fluid, the consequence of certain "diseased motions of the extremities of the "blood-vessels; it has been likewise ascer-"tained, that hectic fever arises only from "the matter of an open ulcer; that what is "termed laudable Pus, when secluded from "the air, is neither capable of creating fever, "nor, except by it's gravity, can it irritate

" the parts on which it rests. When Pus, " however, is exposed to atmospheric air, it " rapidly attracts oxygen, an acid of a pecu- " liar kind is generated, and hectic fever, " the effect of the absorption of aerated mat- " ter, is produced. Now as an ulcer of the " lungs is perpetually exposed to a stream of " air, and of course an ichorous poison conti- " nually forming by the union of oxygen with " secreted matter, an important curative pro- " cess would seem to arise from promoting " absorption so rapidly from the surface of the " diseased parts, that the Pus shall be taken " up as soon as secreted, and consequently " it's combination with oxygen prevented. " If at the same time the medicine employed " to promote absorption should so powerfully " retard the motion of the heart and circula- " ting fluids, that the irritating and morbid " action of the extremities of the blood-ves- " sels, and therefore secretion as it's imme- " diate effect, should be considerably dimi- " nished, if not altogether suspended, another " most salutary purpose would be accom-

"plished. To the cautious and continued "use of DIGITALIS, Sir, I looked for these "consequences, though whether I should be "able to render them sufficiently permanent "to promote a cure, was necessarily a matter "of doubt: It was my wish also, as I have "mentioned above, to effect these changes "without any previous sickness, concluding "that should I be able *gradually* to depress "the circulation, nausea, as a link in the "chain of effects, might be excluded, and absorption, together with a suppression of "morbid action and secretion, still be the "result*."

Whether the opinion of the origin of hectic fever, thus delivered by Dr. DRAKE, be admitted or not, this application of the powers of DIGITALIS to rid the system of the presence of purulent matter, must be considered as a peculiarly happy effort of medical reasoning, founded upon the known properties and effects of this plant; and in the two subjoined cases it completely succeeded.

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* Medical Contributions, page 481.

George Marris, aged 16, was affected with pain of the right side, frequent short cough, copious expectoration of dense fœtid Pus, occasionally mixed with blood, pulse one hundred and twenty, great emaciation and prostration of strength, slight perspiration towards morning, skin hot and dry, and shivering fits for two or three days. On the 26th of June he took fifteen drops of tincture of Digitalis, after having lost a few ounces of blood, which was found to be sizy. This dose was repeated twice a day, and gradually increased to fifty drops; and, on the 17th of July, the following symptoms were observed:—Pulse forty-four, expectoration reduced to three or four spoonsful, no cough, strength daily increasing, appetite good, much intermission of the pulse, but no sickness. Aug. 15th:—His pulse has never risen above fifty for better than four weeks, although the tincture has been gradually reduced to twenty-five drops for each dose, his strength is almost perfectly restored. Ordered to omit the DIGITALIS. August 29th :—Pulse seventy, no intermission, strength perfectly restored, flesh nearly regained, and in all respects indeed well.

GEORGE GRIMES, aged 19, was attacked by symptoms equally well marked, and in an equally advanced state ; with the last patient also, he had an hereditary claim to Consumption. On the 10th of September he commenced the use of the tincture of DIGITALIS, in doses of twenty drops twice a day, and it was gradually increased to forty-five drops for the dose. The pulse was reduced to forty, but did not intermit, although some degree of nausea was the result. On the 21st of October he was in all respects well.

The following Letter from Dr. DRAKE affords me the pleasure of stating the favourable termination of these interesting cases :—

*Hadleigh, May* 14, 1807.

DEAR SIR,——I with pleasure seize the opportunity of giving you all the information which I possess relative to the two cases recorded in the Medical Contributions. Of JAMES MARRIS (Case 1st), I have heard nothing for some years, and can only say, that he continued free from all return of the disease when I last enquired into his situation, at a period when three years had elapsed from the attack.

GEORGE GRIMES (Case 2d), is perfectly well, nor has he experienced any relapse.

Believe me,
Dear Sir,
Your's very truly,
Dr. HAMILTON. N. DRAKE.

Dr. FOWLER was induced to use this medicine in Consumption from it's almost uniform effect of rendering the action of the heart and arteries more slow than natural,—at the same time that it appeared to excite the action of the absorbents; but his expectations of success, he observes, were better founded than upon reasoning a priori; the experience of Drs. Darwin and Ferriar having proved, that several cases of incipient Consumption and of Hemoptoe were cured by this remedy. It was therefore given to nine out-patients of the Stafford Infirmary, labouring under pulmonary complaints, all of whom recovered; apparently, by means of this medicine: some cases of in-patients are also recorded, in which it produced equally beneficial effects. It is to be regretted that in these cases no register of the pulse was kept, nor, indeed, from the circumstances under which most of the patients were placed, could they be so attentively watched, as is always necessary when this medicine is prescribed in effective doses. Still, they are of great value, and, together with the accurate histories of Dr. Drake, they form a body of evidence sufficient to prove the power of the remedy, in some instances at least, over the most formidable symptoms of this commonly fatal disorder.

Before Dr. BEDDOES published this work, he had, from previous communication with these eminent Physicians, been induced to give the DIGITALIS in Consumption, in several examples; but his success was far from equal to that of his correspondents:—"He "prescribed it in a good many cases in which "the patients were in the latter part of the "last stage of Consumption, without being "able to rescue any of them from that situa"tion, although there was a great alleviation "of symptoms, and in some, life was greatly "protracted." An account of several of these patients is given, in which, it is material to state, that the pulse was not reduced in any of them below seventy; and that the quantity of the medicine necessary to produce even this reduction, often caused great nausea, sickness, and languor. In the earlier stages of the complaint Dr. BEDDOES was more fortunate. Three instances had occurred in which the DIGITALIS proved successful, and two were in progress towards recovery. An attempt is made to account for the difference of result between these cases and those recorded by Drs. DRAKE and FOWLER, upon the principle of the greater delicacy of habit and laxity of fibre observed in the former; an observation, the justice of which will readily be admitted by every one conversant with this disease.

Within a very few weeks Dr. BEDDOES published his first Essay on Consumption *. This short period, however, was quite sufficient to have effected an entire change in the opinions of this distinguished Author respecting the utility of DIGITALIS in this disorder.—After animadverting with much severity upon the supineness, and inattention to the promotion of our profession in general, and of this disease in particular, of the fashionable Physicians of the day, "leaders only in vogue, and last in "merit;" we find the discovery, as it is called, of the exhibition of DIGITALIS in Consump-

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* Essay on the Causes, early Signs, and Prevention of Consumption, by T. BEDDOES, M. D.

*Longman and Rees*, 1799.

tion, thus announced :—" Happily the successive endeavours of English Physicians " promise a brilliant æra for humanity." " An " effectual remedy for Consumption appears " to have been nearly ascertained ;" and " I " daily see many patients in this disease advancing towards recovery with so firm a " pace, that I hope Consumption will henceforward as regularly be cured by the FOXGLOVE, as Ague by Peruvian Bark. Could " we obtain a single auxiliary for FOXGLOVE, " such as we have in many substances for the " Bark, I should expect that not one case in " five would terminate as 99 in 100 have " hitherto terminated." Thinking thus, it is little surprising that Dr. BEDDOES should pronounce all encomiums upon the Authors of this most useful of all discoveries inadequate, and any encomium impertinent,—that he should mention it as a cause for national rejoicing greater and more universal than had ever before occurred,—or, compare it with that of the circulation of the blood, and place his " able correspondents" on a footing with the immortal HARVEY. It is but justice to remark, that Drs. DRAKE and FOWLER took no part of this extravagant praise to themselves. Dr. DRAKE soon after published an account of three cases of Consumption, in two of which the DIGITALIS failed; and he observes of the five cases that had now fallen under his care, three of which recovered, "I have no expectation, that upon a larger "scale, the proportion of fortunate to fatal "result would be what my experience has "given*." And Dr. FOWLER relates his cases with much diffidence.—We are not informed that any particular mode of administration, or of combining the DIGITALIS with other remedies, had contributed to produce the favourable results upon which Dr. BEDDOES had formed these sanguine hopes;—nor are any directions for it's employment pointed out, except by referring to the Papers of Drs. DRAKE and FOWLER, in the Contributions.

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* Medical and Physical Journal, vol. 2d, p. 268.

These publications of Dr. BEDDOES, and the remarks made upon them in the journals of the day, drew from Dr. MACLEAN, of Sudbury, who had long paid great attention to the exhibition of DIGITALIS, a very excellent Letter to the Editors of the Medical and Physical Journal, which appeared in September 1799; and, although written at a period when the attention of medical men had so lately been recalled to this remedy, it certainly contains the most just and accurate views of the powers of this plant, that have at any subsequent period been published.

Dr. MACLEAN's experience of the use of DIGITALIS in pulmonary disorders, was very considerable, and especially in Asthmatic Coughs, Dyspnœa accompanied with, or having a tendency to serous effusion, and Hydrothorax, &c.: and, even in tubercular Consumption, it was found a most valuable addition to our limited means of relief. He observes, "It will sometimes cure when the most ap-
"proved remedies fail, and when of itself it is

"insufficient to subdue the disease, it will "prove a valuable auxiliary to other means. "Yet, it's powers are limited even in the early "stages; this is all that it will be found capable of performing, but this is doing a great "deal;" and he laments the probable fate that must await his favourite remedy, from it's being so highly extolled; indeed he mentions instances in which, even then, it had fallen into neglect, from having been found unequal to satisfy expectations of it's efficacy, that should never have been formed.

In the same Journal is contained a Paper with several cases by Dr. MOSSMAN: the first attempts of this Physician to effect the cure of Consumption by DIGITALIS, however, were like Dr. BEDDOES's, not very satisfactory; but, like him also, he soon discovered it to possess the most extraordinary powers over this disorder. And Dr. BREE, who had long directed his attention to disordered respiration, tried the DIGITALIS in several instances of Consumption; and communicated the result of his experience to the Editors of this publication. In his hands, it proved inefficacious in eight out of nine cases, but the pulse could not be reduced, in any of the former, below 96, although the medicine was made to produce other sensible effects; whilst, in the only successful instance, it was brought down to forty, and never for a month rose above fifty; at the end of this period the patient was found free of disease.—And in this volume of the Medical Journal, Dr. DRAKE, in addition to the Paper already mentioned, has given another; in which, at considerable length, he ingeniously supports his former opinions upon the mode of action of this remedy, and his account of the origin of Hectic Fever, &c. which had been objected to.

The early attention paid by Dr. FERRIAR to the DIGITALIS, and the continued use of it in his practice, for several years, particularly qualified him to treat of this plant; and the attention it very generally, at this time, excited amongst medical men, induced him to publish an Essay on the subject. From the year 1790 he had been accustomed to prescribe it, with great benefit, in Hæmorrhage, and especially, in Menorrhagia; in many cases of which, he found it to succeed completely, in doses of half a grain every night; it was, however, sometimes necessary to repeat this dose during the day also. The cases of Consumption in which he used this medicine were of that class called scrofulous, and from the appearances observed in the dissection of such patients, his expectations of success were very moderate; but, by diminishing the velocity of the pulse, he hoped to lessen one cause of irritation to the lungs; and it appeared possible, that the abatement of the impetus of circulation might lead to a suspension of the diseased action, subsisting in them. Some advantage also was expected from the diuretic effect of DIGITALIS. Dr. FERRIAR'S success in the exhibition of this remedy, however, was far from considerable; a few cases were relieved; and indeed generally, when the pulse was reduced in frequency, a considerable mitigation of the symptoms followed. But few were rescued from the disease. "The result "of my experience," Dr. FERRIAR observes, "may be given in a few words: it is, that "the patient's ultimate recovery is not to be "confidently expected, even when the pulse "is reduced in velocity, and the symptoms "evidently mitigated, for a time, by the ac-"tion of the medicine. Many disappoint-"ments have taught me not to be elated "by one or two instances of success; and I "should deceive the public, if I presented to "them only examples of fortunate practice. "I believe that DIGITALIS, properly admi-"nistered at the beginning of phthisical af-"fections, may suspend the morbid action of "the lungs, by which tubercles are formed; "that by it's continued exhibition, after "Hæmoptysis, it may be possible to procure "the cicatrization of the ruptured vessels, "and thus to prevent the formation of ulcers; "and I am even disposed to hope, that it's "power of soothing irritation may extend so "far, as sometimes to heal ulcerations of the "lungs, in the advanced stage of Consumption. A remedy, from which these expectations may be indulged, is of unspeakable "value, and merits the strictest attention of "the Physician. But, at present, I dare not "suppose that many cases of confirmed Consumption will be cured by it; for the extensive mass of disease, generally apparent in "inspecting the lungs of phthisical subjects, "and the strange formation of new morbid "parts discoverable in it, would require for "it's amelioration an effort of the power which "originally created the living body." In Spasmodic Asthma, Dr. FERRIAR found the combination of DIGITALIS with Opium of great use, and by giving half a grain of each every four or five hours, he has been able completely to suspend the symptoms of this disease.

An Appendix, with a Letter from Dr. PERCIVAL, is added, confirming Dr. FERRIAR's experience of the utility of this medicine in dropsical, as well as in pulmonary disorders;

but agreeing with him, that, in the latter, it had been too greatly extolled.

The opinion so decidedly expressed by Dr. FERRIAR, in this work, of the powers of DIGITALIS, in almost invariably depressing the circulation to a given standard, and of steadily maintaining it there, at the will of the Practitioner, had great weight in directing the application of this remedy, to the cure of Inflammation, and of Inflammatory Fevers*; although he does not actually recommend it in such diseases.—It was consequently much used, as a mean of superseding the use of the lancet, and highly commended by subsequent Authors. Dr. MOSSMAN's opinion of it's efficacy in Pneumonic Inflammation is very decided, and has already been quoted at p. 38. And Dr. CURRIE, whose premature death every lover of science has deplored, placed great reliance upon this power.—" I have," he says, "employed the DIGITALIS to a very " considerable extent in Inflammation of the " Brain, and of the Heart, and of the Lungs; " and have succeeded with it in situations " where I should otherwise have despaired. I " have also found it an excellent remedy in " Inflammatory Rheumatism *." From a private communication made to Dr. CURRIE, after the publication of his book, it appears that Dr. FERRIAR had also experienced much benefit from DIGITALIS in Inflammatory Fevers †.

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* "If any man had expressed an opinion, a few years "ago, that we should discover a medicine capable of re-"ducing the pulse, without danger, from 120 in a minute "to 75 or 80, at the will of the Practitioner, he would "have been ridiculed as a visionary. Such, however, "under proper management, is the power of DIGITALIS." And again—"It is well known to every experienced Prac-"titioner, that bleeding with the lancet is very inadequate "to the purpose of lessening the velocity of circulation, "unless it be carried to a dangerous excess. The FOX-"GLOVE furnishes us with the means of regulating the "pulse to our wish, and of supporting a given state of "velocity, as long as we judge it proper."

FERRIAR on the Medical Properties of the
FOXGLOVE, p. 5 and 12.

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* Medical Reports, vol. 2d, p. 420.

† Ditto, ditto.

From these opinions, Dr. BEDDOES, Dr. KINGLAKE, and others, who considered this plant as a tonic and stimulant, entirely dissented.—Dr. BEDDOES says, "In Pleurisy, "if any one should be mad or wicked enough "to forego the so certain resource of the "lancet, in favour of the *sedative* virtue of "the DIGITALIS alone, he would, I apprehend, increase the disorder if he confined "himself to moderate doses.—It is possible "that immense doses, by rendering the period of excitement evanescent, might produce the desired effect. On this principle, "Opium may be sovereign in Pleurisy. But "I know not who would feel himself justified "in proceeding on such a principle*."

That the DIGITALIS, which, when given in an over dose, is capable of producing *immediately*, and without the appearance of any previous *excitement*, such deleterious and even death-like symptoms of debility, is justly reckoned as a tonic and stimulant, cannot, I think, be admitted; indeed I rather incline to consider it, with Drs. FERRIAR and CURRIE, as a direct sedative, however the Brunonians may attempt to ridicule the term.—Yet experience impels me entirely to agree with Dr. BEDDOES, that DIGITALIS is never useful in Inflammation, at least until after considerable evacuation has preceded it's exhibition.

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* Observations on the CONSUMPTIVE, DIGITALIS, &c. by Dr. BEDDOES, p. 222.

In confirmed Consumption, Dr. CURRIE laments that the hopes entertained of the DIGITALIS have not been fulfilled, though it is of essential benefit in the predisponent state, and even in the incipient stages of the disease. In families, where this fatal disorder is hereditary, the use of this remedy as a prophylactic will, he observes, save many a life that would otherwise have been cut short.

In the 3d volume of the Medical and Physical Journal, at this time deservedly very extensively circulated, many Papers upon the use of DIGITALIS in Consumption are given, by several respectable Authors.—A minute analysis of their contents, however, would afford little advantage, and extend this Sketch beyond it's appropriate limits*. We may collect from them generally, that this remedy was much employed;—that it sometimes produced extraordinary benefit, even in the advanced stages of the disease;—and that, in a great majority of instances, notwithstanding the partial views with which it was often prescribed, it was found only able to effect some allevia-

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* Dr. KINGLAKE gives it as his opinion, that the beneficial agency of DIGITALIS is greatly increased, and it's deleterious effects lessened, by small portions of either pork, mutton, or beef, not exceeding an ounce, rather under-dressed, well masticated, and repeated every two hours, until six o'clock in the evening; and, by assiduous friction, with a flesh brush, upon the region of the stomach and surrounding parts.

Dr. KINGLAKE on DIGITALIS in Consumption, Medical and Physical Journal, page 120.
Mr. BAILLIE on ditto, ditto, p. 127.
Dr. MAGENNIS on ditto, ditto, p. 129.
Dr. MACLEAN on ditto, ditto, p. 150.
Dr. DRAKE on ditto, ditto, p. 305.
Dr. MOSSMAN on ditto, ditto, p. 311.
Mr. PENKEVILL on ditto, ditto, p. 315.
Dr. CARSON on ditto, ditto, p. 513,

tion of the symptoms. Nor, does it appear that the experience of these ingenious Authors had hitherto contributed to approximate the diversity of their opinions upon this subject.

In 1800, Dr. MOSSMAN published an Essay upon the Origin and Connection of Scrofula and Glandular Consumption, with Observations on the Medicinal Powers of the DIGITALIS.—Of this remedy he now speaks in very high terms, and even conceives that, in the primary stages of Consumption, it amounts almost to a specific ; this Author ascribes it's virtues exclusively to the dominion it is capable of exerting over the heart ; and he states, what I have invariably found to be the case, that little or no advantage is, therefore, to be expected from it, when the effect of retarding the circulation cannot be produced, before the evils arising from the deleterious qualities of the plant become obvious.

In the 4th volume of the Medical Journal, published in 1800, Dr. DRAKE gives, under one distinct view, the whole of his experience in the use of the DIGITALIS. By this statement it appears that, from the period when the cases of GRIMES and MARRIS occurred to him in 1797, he had prescribed it in 15 cases of Consumption, with the following result:

| NAMES. | STAGE. | RESULT. |
|---|---|---|
| Marris Mr. | Purulent. | Recovered. |
| Grimes Mr. | Ditto. | Ditto. |
| Ames Mr. | Ditto. | Ditto. |
| Howlett Martha, | Incipient. | Ditto. |
| Bridgman Miss, | Ditto. | Ditto. |
| Hammond Sarah, | Ditto. | Ditto. |
| Bush Anne, | Purulent. | Ditto. |
| Salmon Mrs. | Incipient. | Ditto. |
| Hart Anne, | Purulent. | Ditto. |
| Hollick Mr. | Ditto. | Undetermined. |
| Whitmore Mr. | Ditto. | Died. |
| Boutell Mr. | Ditto. | Died. |
| Smith Mr. | Ditto. | Died. |
| Green Mrs. | Ditto. | Died. |
| Holton Mrs. | Ditto. | Died. |

The general result of these cases is very flattering, and fully equal to the degree of success Dr. DRAKE had ventured to expect*.

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* Medical and Physical Journal, vol. 2d, p. 268.

And they are also highly valuable, as proceeding from the pen of a Physician of eminence and candour, who had for some years paid unremitting attention to this remedy.

Dr. MAGENNIS, who had the superintendance of the extensive Naval Hospitals at Plymouth, was induced, by the success which followed the exhibition of DIGITALIS in a very interesting case of Consumption, already related by him (STROED's, Med. and Physical Journal, vol. 3d, page 128), to make ample trial of this remedy, in the instances of this disorder which occurred among the Seamen and Marines under his care.

Such patients were, indeed, particularly calculated to ensure a more than commonly favourable result: the activity of their former habits, and their food and cloathing, both more plentiful than in the lowest classes of society, would render them less liable to attacks of Consumption; or if, by exposure to particular causes *, they could not escape this disease, their recovery might still, with greater certainty, be hoped for.—The confinement of these patients to an Hospital also, the regularity of their attendants, and the accurate exhibition of their medicines, would produce favourable effects, not to be expected in private practice; unless indeed in the higher ranks of patients, where attention can be depended upon: and in such examples extraordinary delicacy of frame, for the most part, counteracts every other advantage.

With every allowance, however, for the favourable circumstances under which these patients were placed, Dr. MAGENNIS's success, in their treatment, was altogether extraordinary and unprecedented; and such as,

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* Dr. MAGENNIS is of opinion, that the continual and severe duty performed at this period by the Channel Fleet, which was seldom more than a few days in port at a time, contributed to produce the alarming number of Consumptions which afflicted the Seamen and Marines sent to this Hospital.

in the present state of our knowledge, I fear we shall in vain expect to find equalled.

Five of these cases are recorded at length*: they were all advanced into the purulent stage, and all appeared almost hopeless; yet, they all recovered. The pulse in every case was reduced, by the medicine, considerably below the natural standard, and the amendment seemed commensurate. Indeed, observation confirmed Dr. MAGENNIS in the truth of this opinion. "I have met," he observes, "with several instances, in which the DIGITALIS, given freely and largely, effected not "the smallest reduction of the pulse; and in "these, the patients uniformly derived no advantage whatever from it's use;" and in proof of this fact, two interesting examples of Consumption, in which the pulse could not be reduced, and death followed, are given at length.

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* Medical and Physical Journal, vol. 5, p. 204.

The tincture of DIGITALIS, employed in these cases, could not have been saturated, as 300 drops were sometimes taken daily, before the due reduction of the circulation could be effected. The whole number of patients treated by Dr. MAGENNIS amounted to 77; of these 53 were advanced into the purulent, and 24 were in the incipient stage.—45 recovered; 22 were discharged much relieved; and 10 only died ! ! !

In 1801, Dr. BEDDOES published his Observations on the Medical and Domestic Management of the Consumptive, and on the Powers of DIGITALIS purpurea. But the picture he now gives of his experience in the use of this remedy (since his first Essay upon the subject appeared in 1799), exhibits a melancholy reverse of the brilliant colouring, so conspicuously displayed in that work. With all the facilities of access to patients labouring under Consumption, afforded by a residence at Clifton, to a Physician who was known to have paid so much attention to this disease; "and with the advantages of having "seen, during a period of three years, many "scores of phthisical invalids among the "poorer classes, and of having always close "at hand a number of opulent patients of the "same description;" Dr. BEDDOES does not seem to have met with above five or six instances of confirmed Consumption, in which this remedy was so decidedly useful, as to merit narration. One of these cases, Dr. BRIGGS's, is very interesting; the relation is made by himself, and the state of the pulse is accurately attended to:—the symptoms were such as portended a fatal and speedy issue; and the patient was restored to perfect health by the use of the DIGITALIS alone.

Two other cases are mentioned by Dr. BEDDOES, in which the FOXGLOVE having, by itself, failed to produce any good effect, it was given, in the first, combined with tincture of Squill and Colombo; and, in the second, with Cicuta and Opium. These compounds reduced the pulse, and restored the patients.

In the Medical Contributions, Dr. BEDDOES had mentioned a patient under the influence of DIGITALIS, whose pulse, which beat at eighty, in the erect posture, suddenly fell to sixty, in the recumbent; and again mounted to eighty when the patient returned to the erect position: and he gives in this Essay, page 168, a case afforded by my friend Dr. CRAWFORD, of Bath, in confirmation of his remark. From this observation the practical inference is drawn, that attention should be paid to the state of the pulse, in the recumbent posture, when the DIGITALIS is prescribed in efficient doses; that it may not be carried too far, without due warning.—But, although I am very far from wishing that any precaution should be omitted, that is likely to ascertain (before unpleasant symptoms have occurred) when this remedy has been pushed to the full extent that can be borne with safety, and would therefore concur with Dr. BEDDOES, in recommending attention to this circumstance; I must, notwithstanding, be permitted to entertain some doubts of the justice of the observation, as applicable to the action of this medicine alone.

I have paid much attention to this subject, without being able to convince myself of the fact in question; and I believe the variation in the pulse will rather be found to accompany debility in general, than to depend upon the particular influence of DIGITALIS. In Dr. CRAWFORD's case, it will not fail to be observed, that, as the patient advanced in strength, the variation of the pulse became less, and at length, though the medicine was still taken, it was not noticed.—Nor have I found in cases of Hydrothorax, when the difficulty of remaining reclined was overcome, and the pulse much reduced in frequency by the FOXGLOVE; that any other difference was produced from change of posture, than what may always be expected when considerable debility is present.

There is also observed great uncertainty of the manner in which the circulation is affected in different patients, by DIGITALIS.—In STROED's case, related by Dr. MAGENNIS *, the pulse was found, for weeks together, to be from 20 to 40 slower in the evening than in the morning, contrary to general observation. And Mr. ALLEN, whose case is related by Dr. BEDDOES, found his pulse, which, from the influence of the FOXGLOVE, was at 50 when he continued erect, suddenly rise to 70 on lying down upon a sofa.—This is attempted to be accounted for, on the supposition that some diseased part of the lungs was irritated by pressure in the recumbent posture; but, after remaining in bed all night, the pulse was found as slow as when he stood up.—I have had no opportunity of establishing the remark, that the pulse became intermitting, as well as slower, when a patient, under the influence of DIGITALIS, assumed the horizontal position; nor is this circumstance mentioned by Dr. CRAWFORD, although the variety in his case was very great. Still this difference of

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* Medical and Physical Journal, vol. 3d, p. 128.

the pulse in different postures, demands attention, when this medicine is prescribed; and in general practice, in cases of great debility, it should never be kept out of view.

To Dr. BEDDOES's Essay are added, in an Appendix, Cases and Observations on the Efficacy of DIGITALIS in Consumption; with Speculations on it's Modus Operandi, by Dr. KINGLAKE. Fourteen cases of Consumption, chiefly in the incipient state, are here given; in about one half of which this remedy appears to have been decidedly useful, although the pulse was not reduced in frequency in more than four of these.—In the ulcerated stage of the disease, Dr. KINGLAKE was not fortunate enough to experience any instance of recovery.

From this period, little has been written on the subject of the DIGITALIS, and the remaining part of the Medical History of this plant can record little more than the instances in which it has experienced almost total neglect. The periodical Journals have long ceased to exhibit the high-wrought encomiums upon it, that a few years since so amply contributed to swell their pages ; and the late Authors who have written on disorders in which the beneficial agency of DIGITALIS was supposed most conspicuous, have not even mentioned it.

Dr. BEDDOES, in his excellent Essay on Consumption (Hygëia, Essay 7th), takes no notice of the FOXGLOVE, although the plan of his work did not preclude the commendation of other remedies in different disorders ; and the prophylactic powers of this medicine, in checking the disposition to Consumption, might well have justified a small portion of his former partiality.—Nor does Dr. BREE, who indeed had found little benefit from this remedy in Consumption, appear to have called it to his aid in any of the instances of disordered respiration, of which he has so accurately treated : yet, one of his indications in the first species of Asthma is, " to remove the "extravasated serum already present, by "absorption," &c. The frequent occurrence of this symptom in most cases of Asthma, as the cause of irritation to the lungs, or consequence of the weakened action of the vessels of these organs; and the disposition of this disease, when long protracted, especially in advanced age, to end in Hydrothorax[*]; must often call upon the Practitioner to endeavour to fulfil this important indication[†]: and, I presume, he will find no other mean of success at all to be compared with the use of Foxglove, combined with such remedies, in the intervals of the paroxysms, as are judiciously recommended by this eminent Physician[‡].

The only late Author who has paid any attention to the beneficial agency of Digi-

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[*] See Withering's Account of Foxglove, sect. 10, 11, 12, 13, and 14—page 195 et seq.

[†] Ferriar on Foxglove, page 33.

[‡] A Practical Enquiry into Disordered Respiration, by R. Bree, M. D.—Third Edition, 1803.

TALIS in Consumption, is Dr. REID*. He observes, it is only in the early stages of this disorder that we can with any confidence hope for a cure; but that, however violent the previous symptoms, if no expectoration of purulent matter have taken place, we may in general safely pronounce the disease curable: and that this remedy may, under due regulation, and with sufficient attention to other circumstances of regimen and diet, be then employed with a prospect of almost invariable success.—In Pneumonic Inflammation, Dr. REID has found the FOXGLOVE of decided use, when blood-letting had been previously employed; and in certain eruptive diseases, which are found frequently to lay the foundation of confirmed Phthisis, this medicine has effectually obviated the consumptive tendency generated by the continuance of inordinate irritation.

This respectable Author thinks that the

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* A Treatise on the Origin, Progress, &c. &c. of Consumption, by JOHN REID, M. D.—London, 1806.

plant acts entirely by it's stimulant power; he observes, "When administered in appropriate quantities, it exhausts arterial excitement with so great a rapidity, that it's "stimulant power is neither perceptible nor "injurious." Although we may be compelled to dissent from an opinion that demands the admission of this effect of DIGITALIS, which is so rapidly excited and so evanescent as not to be *perceptible;* and, that this remedy has in *appearance* only, and not in reality, a sedative power, when given in considerable doses; yet, the following judicious observations, with which I shall conclude this brief account of the opinions of Authors upon the powers of this extraordinary plant, will, nevertheless, be readily admitted:—"FOXGLOVE, however, "although great, has limited powers; and "both reason and experience authorize the "conclusion, that, where the substance of "the lungs is generally diseased and extensively ulcerated, neither DIGITALIS nor "any other agent can effect more than an "alleviation of the patient's sufferings.——

"This, indeed, forms the distinctive and melancholy character of pectoral and other "affections of organs, which merely, as local "diseases, undermine the fabric of vitality, "and divide the slender thread by which "existence is supported."

Reid on Consumption, p. 249.

# OF THE
# CULTIVATION AND PREPARATION
# OF
# DIGITALIS.

THE DIGITALIS is too well known to require description. It is a biennial plant, and flowers about the middle or latter end of June. It naturally delights in dry, gravelly, or sandy soils, particularly on sloping banks; it may, however, be cultivated with great success, and with little trouble, in most situations in gardens or pleasure grounds, where a mixed artificial soil prevails.—Much difference of opinion has arisen upon the question, whether the properties of this plant are deteriorated by cultivation? I believe, however, it must be admitted, that it loses none of it's activity by removal from the situations where it spontaneously flourished.—If this conclusion be established, it will afford every Practitioner, who may be desirous of using this powerful remedy, the opportunity of cultivating it under his own eye, and of obtaining a preparation upon which he may invariably depend. For some years past I have been supplied with the leaves of DIGITALIS from my own garden, and from those of several of my friends, where it was cultivated as an ornamental plant; and, although considerable difference in the situation, soil, and exposure of the grounds, from whence my collection was made, necessarily existed, I never perceived that any parcel of the leaves thus obtained was deficient in the active qualities of the plant.—I therefore believe that the DIGITALIS may be successfully propagated in almost every garden, or amongst shrubs, where there is sufficient space to command full exposure to air; and that larger, and more vigorous leaves are thus to be obtained, than from the choaked-up plants naturally produced in shaded lanes and hedgerows.—Nor is the cultivation of this plant attended with any difficulty; the seed may readily be procured, and should be sown very thin, in the Spring, in a border of light earth. In the Autumn, the plants are to be removed to various situations, where they are intended to remain; and they will form an elegant addition to the beauty of the flower garden and ornamental plantation. No attention is required for their preservation; they will spring up in numbers from the seed of the old plants, and the only difficulty will be to thin them sufficiently.

Dr. Withering, who had experienced much uncertainty from the exhibition of this medicine, when possessing unequal degrees of strength, which arose from it's being collected at different seasons, directed the leaves to be gathered when the flower stems had shot up, by which this inconvenience is entirely obviated. The largest and deepest coloured leaves[*] are to be selected and carefully dried, either by constant exposure to the Sun, or to a stream of air where no Sun is admitted. When completely dry, the leaf stems are to be separated by rubbing between the hands, and the leaves reduced to powder. This ought to be of a fine green colour, and of a fragrant smell, not unlike that of new-made hay, but stronger. It should be kept in coloured bottles, unexposed to the light: and although it may retain it's virtues longer, as a succession can so readily be obtained, it is prudent not to depend upon it beyond one year.

The Digitalis is prepared for use in saturated tincture, in infusion, or in powder.—When the full diuretic powers of the plant are required, the infusion is to be preferred, as it appears to exert this influence most completely when given in that form, which also allows a more gradual increase of the dose than can be effected by the powder*.—The infusion recommended by Dr. WITHERING, of one drachm of the dried leaves to eight ounces of boiling water, to which, when strained, an ounce of any aromatic spirit is to be added, is a very convenient preparation, and now generally employed. This form contains a sufficient portion of the qualities of the plant to answer every useful purpose; and it admits of easy regulation in the dose, according to the urgency of the symptoms, the strength of the patient, and the effects it produces.

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[*] Our gardens afford a variety with white flowers, but as the leaves are of a paler green than the others, I have always rejected them.

In those disorders, where the chief object in view is the reduction of the velocity of the pulse, without producing any of the unfavourable effects of this medicine; and, when it is consequently important that the quantity prescribed should be augmented in the most gradual and almost imperceptible manner, the saturated tincture is infinitely to be preferred to every other preparation.—The tincture recommended by Dr. DARWIN is made by digesting two ounces of the coarsely powdered leaves in eight ounces of proof spirit. In this composition there is probably some waste, both of the leaves and menstruum, and a small portion of the tincture only can be obtained from it, even by the strongest pressure; but, as it is of great importance to have it always uniform in strength, and fully impregnated with the virtues of the plant, I prefer this, at the expence of some loss of the materials, to that prepared with a smaller proportion of the leaves. Dr. MACLEAN has recommended a tincture with one ounce of the dried leaves, to eight ounces of proof spirit, which the Edinburgh College has adopted; and another, with four ounces of the fresh leaves to five ounces of Spirits of Wine, each to be digested seven days. I believe neither of these tinctures is fully saturated; the latter is stronger than the former, and being made with less trouble, is to be preferred.

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* In Dropsy, the other preparations merit a decided preference over the tincture, as they act more readily on the absorbent system.

Dr. MACLEAN on DIGITALIS,
Medical and Physical Journal, vol. 2d, p. 121.

I have rarely used the powder of DIGITALIS, except in cases which were considered too slight to demand the attention and confinement necessary, when full doses of this remedy are prescribed. But although the infusion is greatly superior, when a powerful diuretic is indicated, still much advantage may occasionally be expected from the powder. In Chronic Coughs, Dyspnœa, &c. &c. accompanied by considerable expectoration of mucus, and a tendency to effusion into the cells of the lungs, pills formed with the powder will be taken, when the patients cannot be prevailed upon to confine themselves; and, notwithstanding that, under such circumstances, a full dose of the medicine must not be risqued, it may, nevertheless, in this form, and especially in combination with other means of relief, be productive of considerable benefit.

## OF THE EXHIBITION OF DIGITALIS,

### WITH *Practical Observations and Precautions.*

Every medicine of extraordinary powers, and which is consequently capable of producing decidedly advantageous effects, demands great attention to the regulation of the dose, and to the collateral circumstances by which it's beneficial agency is promoted; whilst, inert and indolent drugs may be poured down the throats of the sick, or of those who fancy themselves so, with no other immediate bad consequence, than that of palling their jaded appetites, or nauseating their stomachs. The former may be aptly compared with fine-edged tools in the hands of an expert workman; and the latter to blunted instruments, with which even the best workman can do little or nothing. Our most excellent remedies are thus found amongst the strongest poisons, and those medicines which are recommended as being capable of doing no mischief, can rarely be expected to effect any good. Various preparations of Mercury, Lead, Copper, Antimony, Arsenic, &c. from the mineral kingdom; and of Opium, Hyocyamus, Cicuta, Digitalis, &c. &c. from the vegetable, may be adduced as examples. Some substances also, of every class, hold an intermediate rank, and are beneficial in proportion to their degrees of power.—Amongst these classes of medicines, although the first may be found most pregnant in immediate mischief, there is none without dangerous tendency, if unskilfully applied; and the cold bath, a dose of Jalap or of Ipecacuanha, or even an undue perseverance in the use of saline draughts, or pectoral emulsions, to the exclusion of such active curative agents as are required to check the progress of disease,—if not so speedily productive of disastrous consequences, may become, nevertheless, equally fatal in the end, as a mistaken dose of Corrosive Sublimate, or Arsenic. The Medical Practitioner, therefore, who is not fit to be entrusted with the management of the most powerful medicine, ought not to be depended upon to administer the most trifling; as the sources of error in both are nearly equal, and differ only in the proximity of their effects: and the patient who will permit the use of no other than trifling and harmless drugs, lest danger should ensue, had better at once withdraw every degree of confidence from his medical attendant, and trust to the unaided efforts of nature alone.—Nor, indeed, can the Physician who abandons the prudent and cautious use of the more active articles of the Materia Medica, in compliance with the apprehensions of his patients, or from his own irresolution, hope to experience satisfaction himself, or prove beneficial to his patients, in the exercise of a profession where supineness and rashness are equally to be deprecated.

These observations, into which I have been led by the absurd objections often urged against the employment of some of our best remedies, apply with peculiar force to the plant under consideration*. The DIGITALIS is possessed of extraordinary and apparently opposite qualities. It has the power, in many instances, of reducing the action of the heart and arteries even to one-fourth of their former velocity of motion, and of restraining the pulse within these limits, even for months—a power denied to every other remedy with which we are acquainted: whilst it increases the action of the absorbents to so great a degree, that it often causes many quarts of fluid to be taken up and evacuated daily, in both examples frequently with the immediate preservation of life*.—These opposite effects of the FOXGLOVE upon different sets of vessels, are in a great measure directed by the presence of particular symptoms, and although generally observed to happen at the same time when effusion has taken place, this is far from occurring invariably. They are also capable of being in some degree controuled by the Practitioner, according to the manner in which this plant is directed; and it therefore requires a regulation of it's management, beyond that of a medicine, merely possessing great efficacy.—But the FOXGLOVE will amply repay the extraordinary attention it demands: and, if it's powers, like those of every other medical agent, be limited; still, it will be found capable of effecting what would in vain be expected from any other remedy, and of promoting the cure, or relief, of some of the most hazardous disorders, in which, without the aid of this medicine, the patients must be abandoned as irrecoverable.

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* It was observed to me by an eminent Physician, high in the Medical Department of the Army, when I proposed the DIGITALIS in a case of Consumptive tendency, to which I thought it particularly adapted, that he had twice already been prevailed upon to prescribe *that* medicine, but that nothing should ever tempt him again to sanction it's employment.

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* The commonly observed effects of DIGITALIS are here stated; the explanation is left to others.

In the exhibition of this remedy in dropsical cases, Dr. WITHERING found much difference of effect, arising from the constitution of his patients. In persons of tense fibre, and of great natural strength, with the body in Ascites, and the limbs in Anasarca, hard and resisting, it seldom succeeded; whilst, on the contrary, if the pulse was found feeble or intermitting, and the anasarcous limbs readily pitting on pressure, the body soft and fluctuating, the countenance pale, and the skin cold; the diuretic qualities of the plant were found to follow it's use, in a kindly manner.—This observation induced Dr. WITHERING to attempt to bring his patients to that state, which he deemed most favourable to the employment of FOXGLOVE, by such remedies as might lower the tone of the system. For this purpose he recommends, chiefly, Squills, which he thinks the best preparative for the use of DIGITALIS, and purgative doses of Chrystals of Tartar. These remarks, so far as I have had an opportunity of judging of them, are accurate, if applied to Anasarca and Ascites. In Hydrothorax, however, they have not been confirmed. Of my patients, several were men of very rigid fibre and great natural bodily strength; yet, the FOXGLOVE produced effects upon these, equal to what could be expected from it in more enervated habits.

The efficacy of this remedy in these cases may, perhaps, be promoted by the difficult transmission of blood through the lungs, in which it cannot, consequently, be fully exposed to the influence of the air; and the partial deprivation of the advantages derived from this essential necessary of life, is probably fully sufficient to occasion the relaxation (manifested by the clammy perspirations for the most part present in this disorder) that is found favourable to the diuretic operation of DIGITALIS.

Whether this attempt to explain the superior power of FOXGLOVE over the symptoms of Hydrothorax be satisfactory or not, I cannot hesitate to assert, that it is more successful in this species of Dropsy than in any other. And I believe in general affections we may, by attention to Dr. WITHERING's observation, with tolerable accuracy, predict what prospect of relief is likely to follow the exhibition of this remedy.

In the administration of FOXGLOVE, it is particularly necessary that the portions prescribed should not be directed to succeed each other too rapidly, as it often occurs that the first doses produce no effect, till, by frequent repetition, a considerable quantity of the medicine is thrown in; and that then violent symptoms take place, before any signals of forbearance have been observed. It is fully sufficient to exhibit the preparations of this plant once in eight, or at most in six hours, by which this inconvenience will be avoided, and the full effects of the medicine produced. To an adult, from three to six or eight drachms of the infusion may be given every eighth hour; and half a grain of the powder, if there is reason to prefer this form, is at first a sufficient dose. Either preparation may be gradually augmented until the urine flows, or some deleterious symptom takes place, which would render it imprudent to push the dose farther. When the flow of urine occurs, in any considerable degree, it will generally continue till the effused fluid is absorbed.—The medicine had, therefore, better be omitted till circumstances demand that it should again be resorted to; and the interval may be filled up by attention to supporting the strength with nutritious food, and invigorating medicines.

It does not appear that any of the disagreeable symptoms produced by an over dose of the FOXGLOVE, are at all necessary to it's diuretic effects, which, although sometimes accompanied by nausea and sickness, &c. often take place without either. Purging, when caused by this medicine, is observed to lessen the disposition to urinary secretion. It is therefore adviseable, in every instance, to avoid these consequences of DIGITALIS, if possible.

The most common effects observed to follow the exhibition of FOXGLOVE, when prescribed too largely, or exhibited too rapidly, are, Vertigo; pain and throbbing of the head and temples, or in the bottom of the orbits; indistinct vision; inability to bear the light; nausea of the most distressing kind, and long continued vomiting; the pulse becomes irregular and slow, but is quickened in it's action by the slightest bodily exertion[*]; great languor, debility, and tendency to Syncope, are often observed; and the patients almost invariably complain, as Dr. MACLEAN has remarked, of a faintness and sinking at the stomach[†], accompanied with loss of appetite.

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[*] Is not this fact sufficient to explain Dr. CRAWFORD's observation?—See page 68.

[†] Medical and Physical Journal, vol. 2d, p. 121.

This is indeed the first symptom usually perceived, when this remedy has been pushed beyond it's proper limits*.

When any of these appearances take place, the use of the medicine must be instantly abandoned, and recourse immediately had to the means best calculated to relieve the distressing symptoms already produced. Opium, Aromatics, Spirits, and especially the Vegetable Acids, are found most effectually to obviate the injurious effects of this plant; and, until they have subsided, it is absolutely necessary that the patient should be enjoined to refrain as much as possible from any exertion. By these means a truce from these formidable symptoms may soon be obtained; and, after an interval of a few days, the FOXGLOVE, if it appear adviseable, may again be more cautiously proceeded with.

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* This enumeration of the deleterious symptoms produced by the DIGITALIS, when imprudently exhibited, will afford an excellent argument to those who judge of the use of this medicine from it's abuse.

“ These sufferings are rewarded by a return “ of appetite, much greater than what existed “ before the taking of the medicine.

“ But these sufferings are not at all neces-“ sary ; they are the effects of our inexpe-“ rience, and would, in similar circumstances, “ more or less attend the exhibition of almost “ every active and powerful medicine we “ use *.” So accurate is this observation of Dr. WITHERING, that although I have had frequent occasion to give up the employment of FOXGLOVE, without being able to effect the purpose I intended by it's use, yet I never saw an instance in which even temporary injury was produced by it, except in Mr. HAYLE's case (Appendix, No. 1).—The following inferences are copied from the same excellent Author :

“ I. That the DIGITALIS will not act universally as a diuretic.

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* WITHERING on FOXGLOVE, p. 187 et seq.

" II. That it does so more generally than " any other medicine.

" III. That it will often produce this effect " after every other probable method has been " fruitlessly tried.

" IV. That if this fails, there is but little " chance of any other medicine succeeding.

" V. That in proper doses, and under the " management pointed out, it is mild in it's " operation, and gives less disturbance to the " system, than Squill, or almost any other " active medicine.

" VI. That the DIGITALIS may be used " with advantage in every species of Dropsy, " except the encysted.

" VII. In cases of Ascites and Anasarca, " when the patients are weak, and the evacuation of water rapid, the use of proper bandages are indispensably necessary."

Upon the first and third of these inferences it may be remarked, that they will be found applicable, in some degree, to every remedy that acts by increasing the urinary secretion. No class of medicines is so uncertain in effect as this, and it will often occur that a diuretic of very inferior expectation will succeed, after the failure of those which rank highest in power. Dr. FERRIAR, in many instances, found Crystals of Tartar efficacious, when all other means had been tried without benefit; and although he states, in confirmation of Dr. WITHERING's opinion, "that sometimes "DIGITALIS will be successful when other "remedies have failed," he adds, "but this "happens with many other diuretics*."

It may therefore be concluded, that a long perseverance in the employment of any diuretic is improper; and that these remedies should be varied, till that which produces the most decisive effects is discovered*.

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* Medical Histories and Reflections, vol. 2d, p. 162.

When the FOXGLOVE alone is found unequal to remove the dropsical symptoms, it may be joined to other diuretics, with a prospect of advantage from their combined action, beyond what can often be effected by any single remedy: thus Squills, Crystals of Tartar, &c. and especially Mercury, which, by powerfully exciting the absorbents, quickens the action of every medicine of this class, and often proves the best diuretic that can be found,—may be made subservient to the action of DIGITALIS. Indeed, when time has been allowed, I have very commonly exhibited Calomel, or, if the bowels were irritable, mercurial friction, for a few days previous to the use of this remedy; and I have found this plan of proceeding decidedly superior to every other. In Hydrothorax, this is the only combination I have had occasion to adopt, but the urgency of the symptoms in this disorder seldom affords time for the previous employment of Calomel. In other dropsical affections, the FOXGLOVE will more frequently fail, and the combination of other diuretics will often be required.

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* "When diuretics act successfully, they in most cases "operate early. Hence the advantage of changing diu"retics in the beginning of the disease."

Medical Histories and Reflections, vol. 2d, p. 166.

I apprehend that the observation of Dr. WITHERING respecting the difficulty of *mildly* affecting dropsical patients of considerable irritability and tenseness of fibre, by the DIGITALIS, will be also found, in a great measure, to apply to the more gradual exhibition of this remedy, when it is only intended to reduce the velocity of the circulation. In a great majority of instances this effect of FOXGLOVE cannot be depended upon, and after the most cautious introduction of the Tincture, with every attention to the circumstances by which it's favourable action is promoted, the pulse cannot be diminished in frequency, before such hostile symptoms have appeared as compel us to abandon it's use; or, the circulation becomes slower only when these unfavourable consequences have taken place. An attentive consideration of the causes which seemed to prevent this operation of Foxglove, by which I have so often been foiled, has convinced me that they are to be found in the presence of Inflammation, or of a tendency to inflammatory action, of the vascular system. In Dropsy, where this disposition is scarcely ever present, the circulation is commonly retarded by the use of Digitalis; and in Hæmorrhage, where this remedy produces more decided benefit, perhaps, than in any other species of disease, after the vessels have been emptied by repeated losses of blood, the depression of the pulse is almost invariable:—I presume, also, that in health no great difficulty would be found in causing this effect of Foxglove. But in Pneumonic Inflammation, where the abatement of the impetus of circulation and the increased activity of the absorbents would speedily cure the disease, until considerable loss of blood have taken place, these favourable consequences of the exhibition of this plant will be looked for in vain. I am aware that authority of no mean weight can be adduced against this decision. I have, however, been too often disappointed in my hopes of sparing the further loss of blood, in inflammatory affections, and especially in Pneumonia, by the agency of DIGITALIS, not to be satisfied, that however respectable the Authors by whom it is supported, the opinion of the powers of this remedy over Inflammation is incorrect. Towards the latter period of Pleurisy indeed, when bleeding proportioned to the severity of the attack, and the strength of the patient shall have been premised, and when Vomica, notwithstanding, seems likely to take place; or, if great secretion of mucus be present, and effusion apprehended; this remedy will then be found to deserve the full extent of Dr. CURRIE's encomium upon it, prefixed to this volume.

When it is intended to prescribe the DIGITALIS with these views, in the advanced stages of Pneumonia, the infusion, which acts more readily upon the absorbents than any other preparation of the plant, is to be preferred; nor does the rapid progress of this disease permit a more gradual introduction of the medicine, than can conveniently be effected by this form.

In Consumption, if we endeavour to restrain the impetus of the circulation by the FOXGLOVE, the same circumstances will be found to obtain in a degree proportioned to the inflammatory disposition of the vessels. When the pulse is hard and bounding, the countenance flushed, the heat and thirst considerable, and the difficulty of breathing—accompanied with pain of the chest—urgent; little advantage will be derived from the use of this remedy, until these symptoms shall have been removed; nor, indeed, can the pulse be readily or at all reduced in frequency when they are present, unless the DIGITALIS be given in such ample doses as to produce unpleasant effects: And, it is observed, that when the ill consequences arising from the use of this plant have once occurred, they become afterwards much more readily excited than at first. It is, therefore, essential that we should endeavour to remove every symptom likely to obviate the beneficial agency of the medicine, if we would hope to experience full advantage from it, or even give it a fair chance of success.

When Inflammation is supposed to be present in Consumptive cases, where it is intended to make trial of the DIGITALIS, it's relief is consequently to be attempted by every mean likely to succeed, that has not too great a tendency to debilitate the patient, before the tincture is prescribed. A cooling regimen must be recommended. The diet should consist of milk, vegetables, and fruits; or, if any portion of animal food be allowed, it should be of the most digestible kind, prepared in the mildest form, and taken in very small quantities at a time. Acidulated drinks should be prescribed, and the patient enjoined to abstain from wine, spirits in every form, malt liquor, &c. &c.; all sources of mental or bodily exertion must also scrupulously be avoided. It may happen that a degree of pain shall exist in some part of the chest, that will not yield to blisters, or to any similar application; in such instances local bleeding must be had recourse to, or a general bleeding even may be requisite; and to prevent the return of such affections, or counteract their effects, it may be necessary to establish a permanent drain near the part.

If there be any Practitioner disposed to feel apprehensive of the debilitating consequences of the plan here recommended, let him recollect the extensive and irremediable injury produced by the suppuration of a portion of the lungs, or of tubercles formed in their substance—effects of Inflammation, the progress of which this plan is calculated to prevent; and, that when matter is once formed, we can indulge little farther hope from any mode of treatment whatever. Let him also call to mind, that, if an opposite conduct—the exhibition of Steel, Bitters, and a more generous manner of living—appear sometimes to prove useful in Consumption, it is only in the advanced stages of the disorder, when the strength has been exhausted by the formation and absorption, &c. of purulent matter, the produce of Inflammation;—and that, notwithstanding some appearance of benefit derived from this treatment, the fatal event is equally certain, and perhaps equally near.—I am very far from wishing, however, to recommend a generally-debilitating regimen in Consumption, unless it be to counteract Inflammation, which, if not speedily prevented, must prove the source of infinite mischief, and destroy our hopes of relief from the only remedy that can be at all relied upon, in this commonly destructive disorder.

When by these means the propensity to Inflammation shall have been suspended, or considerably lessened, the use of the Foxglove may be commenced. Eight or ten drops of the saturated tincture may be given every eighth hour in a saline draught, or in a glass of lemonade, after the patient has swallowed an equal quantity of Mephitic Alkaline Water. This forms an agreeable effervescing draught, which will prevent the disposition to nausea, often caused by the first impression of a medicine upon an irritable stomach. It may also very usefully be applied to, should the more remote effects of Digitalis seem likely to occur. The dose may gradually be augmented by one drop added to each portion taken in the day, until the pulse is found to be reduced in frequency; or, some of the other symptoms produced by the medicine shall have taken place. The utmost attention must in the mean time be paid to the circulation, by examining the wrist in different positions of the body, and to the other signs by which it may be discovered, when the system is likely to become affected; that, if any of the injurious consequences of the plant should appear, the dose may be diminished, or it's use suspended. If it be found entirely to disagree, it must be wholly abandoned. A careful examination of the patient will probably direct us to the circumstances upon which these unfavourable symptoms depend, and to the means of their removal; and the medicine, when this is effected, may again be had recourse to, with better hopes of success.

By this mode of exhibiting the tincture of DIGITALIS, the prospect of benefit is much increased, the stomach being so very gradually habituated to it's action, that the tendency to nausea, &c. is thereby greatly diminished. Fifteen or twenty drops may probably be taken for the dose, before any considerable reduction of the pulse is effected, and the quantity equal to accomplish this object must then be lessened or increased, according to the degree of retardation that is required. I apprehend it will seldom be proper to bring the circulation below 50 or 60 beats of the artery in a minute. And it is found, when once rendered slower, by the FOXGLOVE, that a smaller quantity will keep up the effect than was required to produce it, and that a longer interval may be allowed between the doses.

Due attention to these precautions will enable us, in many cases of Consumption, to effect the wished-for regulation of the heart and arteries, without exciting any unpleasant consequence of the DIGITALIS; and to maintain the reduced action for a sufficient length of time to derive every advantage it is capable of affording. But it must be admitted that many examples also occur in which this remedy cannot thus be got to act, and where it is consequently useless. I believe this uncertainty in the beneficial agency of FOXGLOVE will generally be found to depend upon the circumstances I have endeavoured to point out.

OF THE

# UTILITY OF DIGITALIS

IN

# HYDROTHORAX,

## AND OTHER EFFUSIONS OF WATER WITHIN THE CAVITIES OF THE CHEST.

HYDROTHORAX was supposed by Dr. CULLEN to occur more frequently than had been imagined, and often to take place in a considerable degree, before it was discovered. I apprehend this remark will apply to the present period with still greater accuracy, than to that in which it was made. Many experienced Practitioners have informed me, that they have of late years met with a greater number of cases of effusion into the cavities of the chest than formerly, and their observation seems entitled to credit, the attention of the

Faculty not having been particularly directed by any late publications to this subject.

Gout has certainly greatly increased, at least amongst the higher ranks of society, in this country, and as Gouty subjects are often attacked by the symptoms of Hydrothorax, the latter disease will of course more frequently be observed. There are, no doubt, other causes of this fact, which it would be difficult to develop. Hydrothorax is also sometimes mistaken for other diseases, as, Organic Affections of the Heart and large vessels connected with it; Augina Pectoris; Asthma; &c. And it sometimes takes place when no suspicion of such a disorder could be entertained.—This will appear from the following case.

On the 29th of May, 1807, I was requested to visit GEORGE FENNER, the farming servant of a Gentleman residing near Bury. The account I received of his previous situation was as follows:—He had been a very powerful man, and was in the 29th year of his age. His health had been good, except that he occasionally complained of faintness and sinking at his stomach, to which sensation, accompanied with palpitation of the heart, he was particularly subject on any sudden exertion, or on lifting great weights. He had about a year andhalf before this last illness experienced a disorder, accompanied with much pain of the chest and difficulty of breathing, which was relieved by blisters and bleeding; and although he recovered from that attack, his former sensations became after it more frequent and severe.—He had been ill ten days before I saw him, but the account I received of his symptoms was so indistinct, that I could form no satisfactory opinion of his situation. He was evidently dying. No pulse was felt at the wrist, and the extremities were cold. He could not remain in bed without having his head much elevated, but he had still sufficient strength to support himself on one elbow. He breathed with great difficulty, and complained of acute pain at his heart, the motion of which was fluttering, often suspended for some seconds, and extremely laboured. In four or five hours he died, and leave was obtained to inspect the body.

This was performed by Mr. HUBBARD, an ingenious surgeon, early on the second morning after the man's death. The heart and large vessels were not found to exhibit any extraordinary appearance, except that the former was rather larger and more flaccid than common. The Pericardium contained no water. The Lungs were suffused with dark-coloured blood, and did not adhere in any part to the Pleura Costalis. But the two cavities of the Thorax contained, by computation, nearly three quarts of bloody water.

From these circumstances, a minute account of the symptoms of Hydrothorax, and a comparison between them and those of the disorders with which it may be confounded, would appear to be, in this place, proper.

Hydrothorax is thus defined by Dr. CULLEN: "DYSPNŒA; FACIEI PALLOR; PEDUM OEDAMATA; URINA PARCA; DECUBITUS DIFFICILIS; SUBITA ET SPONTANEA EX SOMNO CUM PALPITATIONE EXCITATIO; AQUA IN PECTORE FLUCTUANS*."

This is for the most part a disease of advanced life, and, like other dropsical affections, it often succeeds debility however induced. It chiefly attacks males who have addicted themselves to free living, especially to spirituous potation. Such as have long suffered from Gout also, are peculiarly liable to Hydrothorax. The first symptoms complained of are, a sense of anxiety and stricture across the lower part of the sternum, with some degree of difficulty of breathing upon motion, which is aggravated by attempting to ascend an acclivity. Cough, often attended with mucous expectoration, is generally also observed at the commencement of this disorder. The urine becomes scanty and high-coloured, and the ankles anasarcous; the face also occasionally swells and pits upon pressure, especially in the morning.—These signs of disease are accompanied by debility and loss of flesh.

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* This definition is defective, as it does not mention the intermission and irregularity of the pulse—the most marked and common symptom of Hydrothorax.

The symptoms now described gradually increase, but their advances are slow, and a considerable time often elapses before the disorder is fully formed. The difficulty of breathing then becomes excessive. The patient can seldom continue in the recumbent posture beyond a few moments, and the head and upper part of the trunk must be supported almost erect. The sleep is often suddenly interrupted by alarming dreams; out of which the patient quickly starts up in bed, if he have attempted to take any repose, with a sense of impending suffocation. Convulsive efforts of the muscles subservient to respiration, resembling an attack of spasmodic Asthma, with violent palpitation of the heart, generally accompany these paroxysms; which are also frequently excited by the most trifling voluntary motion, or by a fit of coughing.— When labouring under these distressing symptoms, the patient continues erect, with his mouth open, his face and extremities cold, and he betrays the utmost anxiety for fresh air; yet, it sometimes happens that an unexpected current of cold air will occasion severe returns of difficult breathing. When thus attacked, he experiences most relief if inclined forwards near an open window. The pulse with little exception is feeble, irregular, and intermits in a degree seldom experienced in other disorders: and a pain or sensation of numbness often extends itself from the heart towards the insertion of the Deltoid muscle of one or both arms. The countenance is pale, except a livid hue of the lips and cheeks remain; it betrays a peculiar anxiety and ghastliness of appearance; and, together with the upper parts of the body, is commonly covered with a profuse clammy sweat. Drowsiness, Coma, or Delirium, occasioned by the difficult transmission of blood through the lungs, and want of sleep; are frequently found to attend the latter periods of Hydrothorax: and from the same cause the expectoration becomes bloody, or pure blood is coughed up. Sometimes the fluctuation of the water can distinctly be felt by the patient, or perceived by his attendants on any sudden change of posture.

It often occurs that Hydrothorax ends in general Dropsy, by which indeed it is sometimes accompanied from the beginning. But it more commonly impedes the action of the heart, or lungs, before universal Dropsy has taken place, and destroys the patient by an apparent fainting fit, or by suffocation *.

Although in every instance of Hydrothorax, an attentive observer will not fail to discover several of the symptoms above described; yet it does not appear that there is any of them,

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* CULLEN's First Lines—DARWIN's Zoonomia—BAILLIE's Morbid Anatomy, &c. &c. &c.

except the sense of the fluctuation of water within the cavity of the chest, which is seldom present, that is exclusively appropriate to this disorder, or which does not sometimes occur in others.

Dr. CULLEN supposed the sudden starting from sleep to ascertain the presence of Hydrops Thoracis, and considered the disease certain when this symptom was observed.—But later Authors have found it to occur, and have therefore described it, as a part of other diseases, when no water was effused.

It may also be doubted whether there are any particular signs by which it can be distinctly ascertained within which of the cavities of the Thorax the effusion has taken place. Authors have supposed, that if one side of the cavity only was the seat of the disease, the patient inclined towards that side, in which also some swelling might be perceived; but these symptoms are rarely observed; nor is any criterion to be formed by the posture in which the greatest share of ease can be experienced.

Greater irregularity of the pulse[*], and a greater sense of weight and oppression about the heart[†], have been thought to denote the Pericardium to be the part affected. But irregularity of the pulse is one of the most common symptoms of effusion into any of the cavities; and it does not invariably occur even in Hydrops Pericardii.—A few years ago I visited a child under two years old, in which the pulse in the right arm was perfectly regular, whilst in the left it was entirely suppressed. It died soon after, and five ounces of water were found in the Pericardium.

Dr. DARWIN thinks that Anasarca Pulmonum may be distinguished from the other dropsical affections of the cavity of the Thorax, by the greater facility with which the patient can, in the former, bear the supine posture; and I believe there is no doubt of the justice of this observation. It is not, however, invariably to be depended upon; for in Mr. HAYLE's case, when there was scarcely any effusion into any other part of the cellular substance, and when consequently there seemed no reason to suspect the cells of the lungs to be the seat of disease, the recumbent posture could be readily submitted to; whilst Mr. WELTON, the whole progress of whose symptoms seemed to confirm the existence of this particular affection, could not recline himself for a moment. (Appendix, No. 1). I think in this species of Dropsy, especially in the early stages of it, before it is combined with more general effusion, that I have observed the pulse to be less interrupted than in the others.

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[*] BAILLIE's Morbid Anatomy.

[†] Morgagni Epist. 16. 2d book.

The diseases with which Hydrothorax is most likely to be confounded are, Angina Pectoris, or the Syncope Anginosa of Dr. PARRY; Asthma; and Organic Affections of the Heart, or of the large vessels connected with it. Attention to the following symptoms, in which these disorders differ from Hydrops Pectoris, will enable us to distinguish between them with tolerable accuracy.

The Angina Pectoris affects persons of corpulent habits, and who have previously enjoyed good health. During a considerable space of time after the peculiar symptoms of this disease have taken place, they instantly cease on the patient's standing still; and long intervals are experienced, in which the enjoyment of health is perfect; nor is the pulse commonly disturbed in the paroxysms, although this sometimes happens*. There is also more acute pain and greater sense of strangulation in the attack of Angina, than in Hydrothorax; and the arms, especially the left, are more commonly and painfully affected.—There is no loss of flesh, till the disease have existed a long time; no œdematous swelling of the ankles, nor any deficiency of urine; which on the contrary is often found to flow in large quantity *. Persons labouring under Angina can, for the most part, also bear the recumbent posture with ease; and pass the night, at least long after the accession of the disease, undisturbed.—The paroxysms, however, are observed to recur in the latter periods of this disorder, in bed, and to occasion the patient suddenly to start up †. And a full inspiration may be taken and retained a considerable time, which even appears to afford relief in Angina, but is impossible in Hydrothorax.

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* HEBERDEN's Commentaries, p. 365.

It is, therefore, only in the latter periods of Angina Pectoris that there can be any danger

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* PARRY on Syncope Anginosa, p. 20.

† In Mr. BELLAMY's, the first case recorded by Dr. PARRY, this symptom recurred with great severity, and regularly took place between the hours of two and four in the morning. But this was evidently a mixed case, and latterly partook more of the symptoms of Hydrothorax than of Angina. On dissection, two quarts of water were found in the cavity of the Thorax.

of confounding it with Hydrops Pectoris; and dissections have proved that these diseases are not unfrequently combined. An attentive consideration of the progress of the symptoms, however, will readily enable us to ascertain the primary affection*.

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* The Angina Pectoris seems still little understood, notwithstanding Dr. PARRY's excellent Treatise upon it. This disease is commonly attributed to ossification of the Coronary Arteries, an idea which originated with Dr. JENNER. Dissections, however, prove that this cause does not always, or even frequently exist. And it is found that ossification had some time existed when no symptom of Angina Pectoris was observed. In Dr. PARRY's 2d and 3d cases, when considerable ossification was found after death both of the Coronaries and of the adjoining vessels, the patients died in a very few days from the first attack of the disorder.—If this state of the vessels also invariably occasioned Angina Pectoris, we must never expect to see it cured, or even relieved. Dr. HEBERDEN, however, mentions two cases, in one of which the patient nearly cured himself by sawing wood; and in the other, the disease ceased of itself. Mr. L. a Clergyman of low stature, and corpulent, was attacked when about 50 years of age with the symptoms of Angina Pectoris, which continued during three or four years. The paroxysms were exquisitely marked, according to the account of an intelligent Physician who communicated this case to me, and they occurred very frequently. At the end of this period he applied to Sir WALTER FARQUHAR, and was directed

Asthma may be readily distinguished from Hydrothorax by the manner of it's attack, which is generally sudden and without previous indisposition.—During the paroxysm, the pulse is seldom or ever interrupted, although it's action is sometimes quickened. The patient, when the fit is over, enjoys perfect repose in the recumbent posture; and often experiences long intervals of ease without any return of his disorder. In Asthma also, the progress of the disease is generally so slow, that it sometimes continues during the greater part of the life of the patient; and seldom produces death, except through the medium of Hydrothorax, or some other disease of the vital organs, brought on by the long continued exertions of the respiratory muscles.

But it is for Organic Disease of the Heart or larger Arteries, that Hydrops Pectoris is

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to take purging doses of neutral salts for a considerable length of time. He persisted in this plan, by which he entirely recovered his health; and for nearly five years that I have been acquainted with him, he has had no return of his disorder.

most frequently mistaken. Indeed I have rarely seen an instance of this disorder in which it had not been supposed that the symptoms were produced by deranged structure. And in such cases it is too common to abandon the patient as lost, or to attempt his relief only by the use of Anti-spasmodics and other palliative drugs.

In the early stages of Organic Disease of the Heart or large vessels, severe palpitations occur, and the patient is observed sometimes even through his cloaths to be shook by the violence of the pulsations. The heart is felt to occupy a large space. The pulse is often, but not always, irregular. But a full inspiration can be made; the patient can lie down with ease, and seldom experiences much difficulty of breathing. These symptoms come on very slowly, unless they have been occasioned by any sudden exertion, which is extremely rare.—Dr. Baillie and Dr. Pitcairn are of opinion that a rheumatic affection of the heart may occasion an enlargement of this organ.—In ossifications of the valves of the heart or large vessels, or other derangements which occasion an obstruction to the free circulation of the blood, considerable intervals of ease are often experienced; and a return of these distressing symptoms are only brought on by some mental or bodily exertion.—Thus it would appear that the circulation may be carried on sufficiently for common purposes, even if some obstruction exists; when extraordinary circumstances, however, demand an increased supply of blood, or occasion a quickened action of the heart and arteries, the difficulty of transmitting it in sufficient quantity produces the violent and irregular efforts then experienced*.

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* Dr. MONSEY, the celebrated Physician to Chelsea Hospital, found as he advanced in years an irregular stop in his pulse, which occasioned him much alarm.—He applied to his friends Sir GEORGE BAKER and Doctor HEBERDEN, who concurred in opinion with him, that this interruption of the circulation depended upon ossification of some of the large vessels near the heart:—but they afterwards altered their opinion when it was discovered that this phenomenon returned only at intervals—" observing very justly," says the account, " that if the

A minute attention to the symptoms of the different diseases now described, and especially to their origin and progress, and a comparison of them with those which denote the attack and usual course of Hydrothorax, will for the most part enable us to decide with great certainty upon the pressure of water in the cavity of the chest. But there may be mixed cases in which the appearance of other affections are conjoined with these, it being not very uncommon for Hydrothorax to succeed to disorders of several organs contained within the Thorax. When such a combination is suspected, or when any degree of doubt is entertained of the precise nature of the complaint, the DIGITALIS may be recommended according to the plan above pointed out, not only with safety, but with almost

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" cause had been of so local a nature, the effect would " have been permanent and regular." On opening his body, however, great ossification of the large vessels, and valves of the heart, was discovered.

Sketch of the Life and Character of the
late Dr. MONSEY.—London, 1789.

certain prospect of advantage; and although in mixed cases little hopes of final success can be entertained, great alleviation of the distressing symptoms of these diseases may nevertheless be confidently looked for, and life may no doubt be considerably prolonged. It will be observed, that in more than one of the following cases (Appendix, No. 1), very decided relief was produced by the DIGITALIS, before any increased flow of urine had taken place. This appears to have arisen from the decreased action of the heart and arteries, which in such cases may almost invariably be depended upon, from the action of this plant. Should it therefore have no diuretic effect, it may thus, nevertheless, greatly ameliorate the state of the patient. Upon this principle it acts in Aneurism; in which it has been found to afford great relief.

In pure Angina Pectoris I suppose the FOXGLOVE could have no bad effect, if it did not produce benefit. This disorder, however, is so often mixed with effusion into the cavities of the chest, that a trial of DIGITALIS would probably be proper in most instances of this singular disease. Dr. WITHERING met with two distinct cases of Hydrothorax, which had been considered as Angina Pectoris. "In the first the strength was so com-"pletely exhausted by the continuance of "the disease, and the attempts to relieve it, "that the patient did not survive many days. "The other was a Lady, who was entirely "cured by DIGITALIS in eight days, and "continued in perfect health when this state-"ment was made, six months after*."

It may be doubted whether in Dr. PARRY'S first case, related by Mr. PAYTHERUS, considerable relief might not have been experienced, and a prolongation of life effected by the use of FOXGLOVE. This patient appears to have died of Hydrothorax alone—"the paroxysms "(of Angina) became less and less frequent "and painful, his breathing much more dif-

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* WITHERING on FOXGLOVE, p. 291.

"ficult, with an almost constant cough and "expectoration of viscid mucus. For some "nights he could not lie on either side, and "required his head to be raised with two or "three additional pillows.—Œdema appeared "in the feet and ankles. In the act of sitting on his bed-side, he gently slipped down "and instantly expired*." Although several appearances of disease, the supposed consequences of inflammation, were discovered on inspecting the body, none of these was sufficient to have occasioned death, the effusion of water (which amounted to two quarts) into the cavity of the chest excepted.

Dr. WITHERING has observed, 'that the "true spasmodic Asthma, a rare disease, is "not relieved by DIGITALIS;" but "in "the greater part of what are called Asthmatical cases, the real disease is Anasarca of "the Lungs, and is generally to be cured by

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* PARRY on Syncope Anginosa, p. 10.

"diuretics. This is almost always combined "with some swelling of the legs*."

The disorder here mentioned by Doctor Withering forms the Dyspnœa Aquosa of Cullen; the Anasarca Pulmonum of Darwin; and the Asthma Humidum, or Dyspnœa Pituitosa of the older writers. It is far from being an uncommon disease, although it is perhaps not always discovered, or even suspected to have taken place, until it terminates in Hydrothorax, or in general Dropsy. It chiefly attacks persons in advanced life, who have been long subject to troublesome coughs accompanied by considerable expectoration of mucus; and, as these coughs generally come on with the approach of winter, so Anasarca Pulmonum is most frequently found to appear during this season, or towards the spring.—The respiration is difficult at all times, but especially in the morning, after the patient has obtained some repose in bed, where, at the commencement of the disorder, he can continue to recline with little difficulty. If, however, he attempt to remain in this position, after the Dyspnœa becomes troublesome, a severe asthmatic paroxysm is often the consequence*. The pulse is little interrupted until the effusion of water is so great as considerably to obstruct the circulation through the lungs. Anasarca Pulmonum is accompanied throughout with swelling of the ankles, a deficiency of urine, and more or less of the appearance which denotes a dropsical tendency.

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* Withering on Foxglove, p. 195.

This disease often produces Asthma by the irritation of the effused fluid, and thus forms the Asthma Humidum of Authors; but it more commonly, if suffered to run it's course, terminates in Hydrothorax, or in general Dropsy, without the intervention of any regular Asthmatic paroxysms.—In it's progress, however, it is not unfrequently very slow, and many persons suffer considerably during the winter months under this complaint, and obtain a respite from their Cough and Dyspnœa in the summer, many years before the absorbents become sufficiently weakened to suffer any considerable quantity of lymph to be accumulated.

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* If any part of the Lungs must be rendered useless, the inability of the extremities of them must be less inconvenient to respiration; since, if the upper parts or larger trunks of the air-vessels should be rendered useless by the compression of the accumulated lymph, the air could not gain admittance to the other parts, and the animal must immediàtely perish.

Zoonomia, Class I. 2, 3, 14.

Before Anasarca Pulmonum has arrived at any great height, it is not uncommon to consider it as a cattarrhal affection merely (Cattarhus Senilis), and to recommend for it's relief different medicines, supposed to have the power of promoting expectoration; of these, as this disease chiefly affects old and debilitated persons, the warmer and more stimulating expectorants are preferred, as the Turpentines, Balsams, the Aromatic Gums, Squills, &c. &c.—That such remedies are very often useful is readily admitted; the benefit derived from them will, however, I apprehend, be found to depend, not upon their expectorant qualities (a quality not very certain in any medicine), but to be precisely equal to the diuretic effects they have produced. To affections like this the maxim of BALGLIVI accurately applies—"In morbis Pectoris semper ducendum esse ad vias urinæ;"—for in such cases, when the urine once begins to flow freely, the disease will speedily give way.—Here the DIGITALIS may be fully depended upon for relief proportioned to the promptitude of it's employment, and to the steadiness with which it is persevered in. I can venture, from experience, to recommend it in such cases; and to affirm that it will very rarely disappoint the wishes of the Practitioner.

From what has been suggested under this head, it will have appeared, that, in many instances of disease affecting the cavity of the chest, when Hydrothorax is not known to be certainly present or where it is suspected to be combined with other disorders, considerable reliance is placed upon the efficacy of the Foxglove. If, indeed, organic derangement exist, no advantage, except of a temporary nature, can be derived from medicine; but I have been taught to think, that derangement of structure very often is not present when it has been believed certain; and that all the symptoms which are supposed to ascertain that the heart or large vessels are diseased, may arise from the presence of water in some of the cavities of the Thorax.—Under a suspicion of this nature, we can look only to decided relief from the use of Digitalis; and we are encouraged to make trial of this remedy, by reflecting, that if we should even fail of ultimate success, we are employing the only medicine that by it's singular dominion over the heart can allay inordinate action, and thus render the sufferings of the patient more tolerable.

See Appendix, No. 1.

### OF THE

# UTILITY OF DIGITALIS

### IN

# PHTHISIS PULMONALIS.

The frequent occurrence of Consumption renders it's symptoms so familiar to every one, and therefore so unlikely to be confounded with those of other disorders, that a particular description of them is unnecessary. Dr. Heberden states *, that one in four of those who grow up to manhood are carried off by this disorder in London: and although many deaths are recorded in the bills of mortality as occasioned by this disease, which probably ought strictly to be attributed to other causes; "yet in these bills," Dr. Beddoes observes,

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* Heberden's Commentaries, page 370.

"a great number of deaths, not far short of a "thousand, under the title of Asthma, "Phthisic, and Cough are found, which pro-"bably ought to have had their place under "Consumption*." Nor does this calculation appear extravagant when applied to other great towns. At Shrewsbury, during a period of ten years, one death in four is appropriated to Consumption. In Chester, in 1774 and 1775, more deaths were attributed to this disorder than to all the other causes of mortality. And at Bristol, of 1654 persons buried in one parish, 683 stand under the head of Consumption or Decline.—These lists were made out with great accuracy apparently, and published in the Philosophical Transactions. It is evident also that this disease has increased. From Dr. WILLIAM HEBERDEN's examination of the bills of mortality during a period of years taken at the beginning, the middle, and end of the eighteenth century, it appears that the deaths from Consumption were as five at the end, to three at the beginning[*]; and from other documents inserted in the Philosophical Transactions, the increased mortality from this disorder does not seem confined to the Metropolis.—Upon this melancholy picture Dr. BEDDOES, forgetting the discovery of the powers of DIGITALIS, observes, "The victims of Consump-"tion, therefore, if the same order of things "continues, will probably soon be double of "what they were a century ago[†]." Every attempt to lessen the sum of an evil of such magnitude, and thus increasing, will assuredly be received with indulgence, and experience a patient and candid trial.

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* BEDDOES's Hygëia, Essay on Consumption, p. 5 et seq.

It is during the early progress of Consumption, if at all, that we must look towards DIGI-

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[*] Observations on the Increase and Decrease of different Diseases.—By W. HEBERDEN, Jun.

[†] "I perpetually find Consumption attacking new families. Nor does it appear to cease equally in old ones, unless by rendering them extinct."

BEDDOES's Hygëia, p. 21, vol. 2d.

TALIS for any lasting advantages. It will certainly often occasion the relief of several symptoms, and even protract life, in the advanced stages; but when the disease has proceeded so far as extensively to ulcerate the lungs, this, I fear, will be found equally unavailing with every other remedy. If we wish to obtain benefit from the DIGITALIS therefore, no time is to be lost in applying to it's use; and, to gain this object, the first approaches of the disease must be carefully watched. But it is unfortunate that the early period of Consumption is often suffered to pass without attention, or without fear; and, that the Practitioner is seldom called upon till the disease have made considerable progress.

One of the maxims of Dr. BEDDOES, to be hung up in the heart of every Father of a Family, is, "When a son or daughter droops "between fourteen and thirty-four, suspect "that a secret enemy is sapping the Lungs." When, added to this, a slight disposition to cough, shortness of breath, and above all quickness of the pulse, are perceived, it may fairly be concluded that the enemy has effected a lodgment, and that, if not speedily dispossessed, he will not quit his victim till death. Rapidity of the circulation I conceive to be the most unerring guide to detect the disposition to Consumption, and the most important and distinct criterion by which we can estimate the progress that it has made, and the danger present. Dr. HEBERDEN observes, "* The state of the pulse is of great "importance in acquainting us with the degree of danger in a cough, which on account of it's duration, and of the bad symptoms with which it is accompanied, begins "to be of a suspicious nature. A young man "of 18, together with a cough, had a spitting "of blood, a shortness of breath, vomiting, "pains in the side, night sweats, and was "much wasted for two years; but with these

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* Two instances of this kind have occurred to me, and I presume such observations must be familiar to most Practitioners.

" complaints his pulse was hardly quicker " than it should be, and in three years he had " perfectly recovered his health." This accurate observer has therefore fixed the Consumptive pulse at above 90*. I have already ventured to suggest, that it is only by opposing this invariable symptom of true Consumption that the beneficial action of DIGITALIS is manifested†; and that, when an inflammatory disposition of the vascular system exists, which, I have endeavoured to prove, obstructs this effect of the remedy, it becomes unavailing. No increased action of the absorbents is produced by the FOXGLOVE, and consequently the urine is not augmented, unless effusion be present. We must therefore give up this indication of Authors, and place our sole reliance upon the reduction of the circulation, as the only mean of safety.

Our success in this undertaking will be found commensurate with the promptitude of our efforts; and the sooner we apply to the FOXGLOVE, the fewer will be our difficulties, and the greater and more decided the benefit we shall be able to afford our patients.—We shall find less inflammation during the very first approaches of the disease, and the necessity of evacuations, or of any debilitating plan, will consequently be obviated. Indeed I am of opinion that few instances of Consumption would be found to resist the powers of DIGITALIS, or advance into the second stage, were it resorted to at the very first appearance of the symptoms.

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* HEBERDEN's Commentaries, p. 370 et seq.

† Page 61, 65, &c.

The manner of exhibiting the FOXGLOVE in Consumption, and of obviating the impediments to it's favourable operation, together with the necessary precautions to be observed during it's use, have already been described (page 102 et seq.) It has also been mentioned, that Dr. BEDDOES and some other Authors had experienced benefit from combining this remedy with Bitters, Squills, &c. and that by these combinations they had succeeded in reducing the pulse, which the DIGITALIS alone had failed to effect. From such additions I have found little advantage; but Dr. MATON gives sufficient grounds, in his letter to Mr. FREAKE, to prefer the Humulus Lupulus (Hop), in cases when the addition of Bitters may be deemed proper.—" There is " some nicety necessary in determining how " far the pulse is influenced by the use of the " Humulus; but, for my own part, I am led " to believe that it is reduced in frequency, " and increased in firmness by this medicine, " in a very direct manner. In one patient, I " found the number of beats lessened from " 96 to 60 within 24 hours, by only one drachm " of the Tincture and four grains of the Ex- " tract (given once in six hours), and a full- " ness of it was produced similar to that which " is occasioned by a large dose of Opium or " Hemlock. When a strongly marked in- " flammatory Diathesis exists, I believe the " Humulus to be hurtful*."——Since Mr.

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* FREAKE on the Humulus Lupulus, p. 72.

FREAKE's Treatise reached me, I have had only two opportunities of prescribing the DIGITALIS in conjunction with Tincture of Hops, and they were both too far advanced to derive any essential benefit from medicine, nor could the pulse be reduced in either. Should Dr. MATON's observation be confirmed, a very valuable addition to our means of cure in Consumption will be found in another plant of our own growth, although, when an inflammatory disposition prevails, it will require the same precautions in it's use that are demanded by the DIGITALIS.

But the most effectual mean of securing the advantages to be expected from the retarded circulation produced in Consumptive patients by DIGITALIS, or of still affording them some chance of relief when this cannot be effected; and, which indeed is absolutely essential to counteract the propensity to this disease, is found to consist in an equal and higher temperature, and in removing the Consumptive from all risque of exposure to the sudden variations of our changeable climate. To patients of a certain description it has been usual to recommend a voyage to a more genial atmosphere abroad; and when this was found impracticable, that they should pass the winter in Devonshire, or some of the warmer parts of our own kingdom; and the air and waters of Bristol have long been supposed favourable in these cases. Such journies, however, are productive of great inconvenience and distress; and it may reasonably be doubted whether they are of much, or even of any use. To remove a person labouring under great debility from all his connexions, can hardly fail to produce an unfavourable effect upon a mind, generally increased in sensibility, and more rarely filled with the pleasing images and hopes described as a part of this disorder than has been commonly imagined. And if the winter is to be spent exposed in the usual manner to the air of the place inhabited by these patients, it seems to matter little whether it be in Devonshire or elsewhere. In the West indeed the range of the Thermometer is somewhat less, but the difference of temperature is still sufficient to produce every unfavourable effect of transition from heat to cold, and the changes from one extreme to the other are there equally sudden as in most other parts of the island. There is also in the West the insuperable disadvantage of greater dampness.——These objections are in full force against Bristol, and the more fashionable modern resort of the consumptive, Clifton, as a winter residence. Nor does it seem that any great advantage is to be derived from the waters of their springs. Dr. SAUNDERS* thinks that some benefit may arise from the long-continued use of a very pure water in Consumption; but if this be all, pure water can be had by distillation at home. And Dr. BEDDOES has not discovered, after a long attention to this disorder, that the Bristol water possesses any extraordinary virtue. I have therefore no hesitation in adopting the words of an anonymous writer, and to the question, supposing it to be put by a consumptive patient, '*Where shall I spend the winter?*'—"the "general answer ought to be, '*At home;*'— "and this both in respect to health, economy, "and comfort."—"Those who can afford to "spend four, five, or six months in furnished "lodgings, may just as well put their own "house in a condition to keep out the cold; "and they will have a climate superior to any "which they can easily find even beyond the "seas in Europe, and far preferable to any in "England*." Two adjoining rooms may readily be made so close, and so conveniently arranged with proper fire-places, that the heat in both may be maintained at from 60 to 64. These the consumptive patient should occupy, and pass alternately from one to the other, as the Thermometer indicates the increase or diminution of heat; and out of these rooms no temptation should induce him to emerge, till the full advantages of this plan shall have been experienced; or, until it appears that no plan can avail.

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* SAUNDERS on Mineral Waters, p. 125.

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* Manual of Health—London, 1806.

In the premised Sketch of the Medical History of the DIGITALIS, I ventured to doubt (page 68) whether the difference of the velocity of the pulse observed by Dr. BEDDOES and Dr. CRAWFORD, in the erect and recumbent postures, was not more an effect of general debility, than of the peculiar action of FOXGLOVE. I was led to form this opinion from having observed the influence of posture upon the pulse in many diseases accompanied by much debility, when no DIGITALIS had been taken; and, from not having found it to obtain, in some dropsical cases, when the patient was under the full influence of this remedy; still, I recommended attention to this circumstance, when the FOXGLOVE was prescribed in full doses. The following interesting observations are just published in the Edinburgh Medical Journal, July 1st, 1807. They demand attention on their own account, and throw much light on this particular subject; and they will naturally excite great observance of the pulse, when the DIGITALIS is given with a view to retard the velocity of the circulation. The relation is made by Doctor BAILDON, who was himself the subject of the case. He was cured by DIGITALIS of Consumption distinctly marked, and the whole of his narrative is highly important.

" I suspect that the difference in the ac-
" counts we have of it (the DIGITALIS) by
" different Practitioners, has arisen from a
" circumstance very clearly marked in my
" case, and which strongly points out the
" great care and attention necessary in exhi-
" biting this very active drug. I observed,
" and repeated the experiment a great many
" times, that after the DIGITALIS had taken
" effect, *my pulse was not lessened in frequency*
" *when I stood erect;* it was then upwards of
" 100. When I sat down, it fell considerably;
" when lying on my back, it fell much more.
" Thus, during the time it was at 40 when
" lying, it was about 75 when sitting, and

" above 100 when standing. This was invariably the case. When I turned on either " side, it fell two or three, and intermitted.

" I have found the pulse to vary in this " manner, in all the patients to whom I have " given the DIGITALIS to any extent. I " need hardly point out the absolute necessity " of carefully attending to this circumstance."

Edinburgh Medical and Surgical
Journal, vol. 3d, p. 271.

# OF THE UTILITY OF DIGITALIS

## IN

# HEMORRHAGE.

THE phenomena of Hemorrhage indicate the action of DIGITALIS to be peculiarly adapted to check the symptoms of this disorder. Before the blood flows something of a hot fit is commonly experienced, and the pulse is quick, hard, and full; but after considerable loss has been sustained, these first signs of the disease are no longer perceived; the pulse becomes softer and less frequent, the skin is cool, and blood drawn from the arm is not found to exhibit a buffy coat. But although the impetus of the circulation be lessened, it still continues more rapid than in health, and the newly-formed cicatrix is unequal to resist it's power, even when diminished. The vessels therefore are again ruptured, and a repetition of the

Hemorrhage takes place: and, as it is not always safe to decrease the strength of the circulation farther by blood-letting, serious consequences are often apprehended and experienced. DIGITALIS on these occasions is our great resource; and fortunately such is it's efficacy, that it seldom disappoints our wishes. There is no inflammatory disposition present, and it consequently scarcely ever fails to reduce the velocity of the pulse, which for the most part is alone sufficient to cure the disease; and this effect can be kept up without difficulty, till the wounded vessels are entirely healed, and recover their accustomed power of resistance.

The FOXGLOVE appears equally well suited to prevent the recurrence of Hemorrhage from any part of the body; it has, however, chiefly been applied to cases of Hemoptysis and of Menorrhagia; in these it has been used by Dr. DRAKE, Dr. FERRIAR, Drs. CURRIE, of Liverpool and Chester, &c. as already quoted, with signal advantage.

### OF THE

# UTILITY OF DIGITALIS

### IN

# SCARLATINA.

THE Scarlet Fever and Sore Throat is very commonly succeeded by anasarcous swellings of the extremities, and sometimes of the whole body; and these, Dr. WITHERING observes*, do not always appear until some weeks after the other symptoms have ceased. For these consequences of this disease, Squills, Calomel, and tonic medicines are commonly advised; but this affection does not seem to depend upon debility alone,—for it often occurs in a considerable degree after a very slight attack

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* Account of the Scarlet Fever and Sore Throat in Birmingham, in the year 1778.—By W. WITHERING, M. D.

of Scarlatina—and even long subsequent to the symptoms of this complaint; and it sometimes returns without any increase of debility after it had been removed by the common treatment, and when strengthening remedies had been administered. The efficacy of DIGITALIS in relieving this species of Anasarca, is confirmed by Dr. WITHERING in the following words:—"In the year 1779, a num-
"ber of dropsical cases offered themselves to
"my attention, the consequences of the
"Scarlet Fever and Sore Throat. The symp-
"toms in all were very much alike, and they
"were all without an exception cured by the
"FOXGLOVE."

WITHERING on FOXGLOVE,
Introduction, p. 9.

## OF THE
# EFFICACY OF DIGITALIS
## IN
# MEASLES.

THE Hoarseness, Cough, and Dyspnœa, which generally attend the first appearance of Measles; and the inflammatory disposition of the membranes of the lungs, that often comes on when the eruption is about to subside; independent of immediate danger, not unfrequently produce so much injury of the lungs, that a lasting cough succeeds; and when the attack of this disorder has been postponed till the consumptive period of life arrive, especially if the patient be pre-disposed to Phthisis, or have tender lungs; Pulmonary Consumption is sometimes the consequence.—To avert the danger of the primary symptoms of Measles from our patients, the adoption of a strict anti-phlogistic plan of treatment is indispensable, and bleeding, blisters, &c. may become necessary. To fulfil this indication also, the DIGITALIS has been used with success; and my lamented friend and relation Dr. HAMILTON, late of Broad-street, London, some time since informed me, that he was accustomed to prescribe this remedy with the best effects in every period of this disease. But it is in the advanced stages of Measles, when the disposition of the membranes lining the chest to inflammation shall have ceased, or have been overcome by appropriate remedies, that it's use will be found most effectual towards checking the consumptive tendency.

To the use of the DIGITALIS, therefore, given according to the manner directed in Consumption as a prophylactic; we may, under these symptoms, look with decided confidence for the prevention of this disease.

# APPENDIX.

> “ In hoc secundo officio Medicinæ, multa sunt
> “ quæ desiderantur; PRIMUM est, inter-
> “ missio diligentiæ illius HIPPOCRATIS,
> “ utilis admodum et accuratæ, cui moris
> “ erat, narrativam componere casuum circa
> “ ægrotos specialium; referendo qualis
> “ fuisset morbi natura, qualis medicatio,
> “ qualis eventus.”
>
> Bacon de Augmentis Scientiarum.

# APPENDIX,

## No. I.

### *CASE* 1.

Mr. Warner, of Framlingham, aged near fifty, of short stature, dark complexion, and muscular, accustomed to considerable exercise in the superintendance of a large farm, and not addicted to the use of spirits or wine, was attacked in the spring of 1801 with the symptoms of Hydrothorax; and becoming gradually worse, notwithstanding a variety of medical advice, I was desired to see him on the 15th of May. I found him propped up with pillows upon a sofa, and unable to remain a moment in the recumbent posture; his countenance exhibited much of the peculiar anxiety generally found in this disorder; the pulse was rapid and intermitting, in so great a degree, that eight or ten pulsations were frequently lost; the urine was high-coloured, scanty, and deposited a thick dark sediment; and the ankles swelled. A purge was given, and he was directed to take six drachms of infusion of DIGITALIS, in an aromatic draught, every six hours, and a grain of calomel was ordered for him night and morning. No nausea or sickness followed the use of the medicine, which soon produced a very considerable flow of urine, and all his symptoms were thereby speedily relieved. In a few days he was able, with little inconvenience, to walk about his farm; and in less than three weeks he rode to my house, a distance of 16 miles, on horseback, before breakfast. Some strengthening medicines were now given him, and Mr. HARSANT of Wickham Market, a very ingenious surgeon who attended him with me, was requested to observe him frequently, and to have recourse to the DIGITALIS again should any symptom of his former affection appear.

This attention was not unnecessary, for in no long time the urine again became scanty, the legs swelled, and difficulty of breathing, increased upon exertion, again recurred. He was now relieved by the DIGITALIS as before, and he was requested to apply immediately to Mr. HARSANT for the infusion, should the symptoms at any time return. He did so two or three times before his death, which occurred February 6, 1804; but although his faith in the DIGITALIS was unbounded, he neglected to send for it. Indeed his objection to medicine was insuperable; he did not continue his tonic plan above a week, and he could not be prevailed upon even to keep his bowels in proper order, by an aperient pill. He had for some time previous to his death suffered from his former symptoms, though not so severely as before; and, to a friend who urged his application to Mr. H. he replied, that he soon would, if he did not get better. On the morning when he died he was shaving himself, and expired instantaneously.

## *CASE* 2.

Mr. WELTON, of Yoxford, of fair complexion, and very corpulent, is 68 years of age. He is a builder and auctioneer, and his situation in life and convivial disposition have equally led him into company, where he has for many years freely indulged in the use of wine and spirits. His ankles and legs have long been accustomed to swell occasionally, and sometimes the thighs, and apparently the lungs also, have partaken of the anasarcous tendency; since, especially in the winter season, he has suffered from cough, difficulty of breathing, and considerable expectoration of frothy mucus. Mr. WELTON has also long been liable to Gout. I visited him under these symptoms in 1800, but I have no notes of the case as it then occurred, or of the remedies employed—and the surgeon who attended him with me being dead, I can only state from recollection, that I believe he took the powder of DIGITALIS, and that his recovery was speedy.

In May 1803, I was desired to see Mr. Welton again;—his legs were then much swelled, and the urine deficient in quantity; cough and difficulty of breathing urgent; and as he was entirely unable to bear a recumbent posture, he had only obtained short and interrupted sleep for several nights, in his chair. The countenance was livid; the pulse in this case did not intermit; it was about 100, small and hard.—The Foxglove was prescribed, as in the former instance, in infusion, and gradually increased until some degree of nausea occurred; a considerable flow of urine took place, which very soon relieved these symptoms, and in a fortnight he felt no remains of his complaint. Mr. Welton's disposition to Anasarca extending to the lungs twice returned in the two following years, and he as often experienced a complete cure from the Digitalis. In the winter of 1806 I visited him again, and found him labouring under a very severe attack of Erysipelas, extending from the feet to both knees; his legs were enormously distended with water, but he had little or no cough, and he could continue in bed without any difficulty of breathing. He had taken bark largely without apparent benefit. As it appeared that the erysipelatous affection was produced by the distension of the skin, the DIGITALIS was immediately resorted to, and as usual with him considerably increased the secretion of urine. In a few days his legs were reduced to their former size, and the inflammation subsided gradually; several ulcerations, however, took place, in consequence of the blisters produced by the Erysipelas, which at length were cured by the application of slips of adhesive plaster. Mr. WELTON has since enjoyed very tolerable health, except when he has had returns of Gout, and he is now (July 1807) quite well.

## *CASE* 3.

On October 15, 1803, I was desired to visit Mr. HAYLE, a respectable farmer of Marlesford, with Mr. HARSANT, his son-in-law. This patient was between 60 and 70, thin but muscular, dark eyes and hair, and accustomed to take great exercise; he had many years freely indulged himself in spirituous potation. In the spring of 1802, he had the influenza in London, by which he was greatly debilitated, and he attributed his illness to the effects of that complaint. I found him labouring under excessive difficulty of breathing, with severe fits of coughing and expectoration of frothy mucus. His pulse was rapid and intermitting in a very great degree; there was great paleness and anxiety of the countenance; the urine was scanty, but the ankles were very little swelled; and although he could scarcely bear the slightest degree of exertion without producing excessive Orthopnœa, he was able to continue in the horizontal posture a considerable time without much inconvenience—a proof that the most characteristic symptoms of this disease are sometimes absent. An ounce of the infusion of DIGITALIS, prepared according to Dr. WITHERING's directions, was ordered to be given him every sixth hour, with a grain of calomel night and morning;

but his medicine being sent in a half-pint phial, a practice highly improper, when active medicines are employed ; as he found considerable benefit after the third dose, he determined to increase the quantity. He accordingly increased the next two doses to nearly two ounces each (allowing however, the interval of six hours to elapse between them), which produced all the deleterious effects of an over-dose of this plant. October 17th I was summoned to him in great haste, as he was supposed to be dying. I found him cold, covered with clammy sweat, and "sick to death," as he expressed himself. He had brought off his stomach a large quantity of watery fluid, though he had drank nothing ; the pulse was reduced to 60, and was much more regular, but the difficulty of breathing, the cough, and other symptoms of Hydrothorax, were entirely gone.

The sickness was relieved by Opium, Acids, and Aromatics ; and a more guarded use of the DIGITALIS, after a proper interval, was persisted in. His former symptoms did not return, and in a very short time he resumed his usual occupations. Within a fortnight he was able to ride over his farm, and in a month he performed a journey of nearly 40 miles in one day, on horseback. In this case, notwithstanding the relief obtained, no considerable increase of the urinary secretion took place till after the sickness had subsided. With his accustomed occupations, however, his usual habits also returned, and his propensity to indulgence was freely gratified; his difficulty of breathing again appeared, and more than once was he obliged to apply to Mr. Harsant for some of his medicine, which never failed to relieve him.

In April 1805, he was deprived of the use of one side and entirely confined to his bed by a paralytic attack, and I consequently soon after saw him. He had now no difficulty of breathing, no œdematous swellings of the legs, or scarcity of urine; and his pulse, which had never become entirely free from intermission, was much as usual. It was suspected that water might be effused upon the brain, and with this view, Mercury, DIGITALIS, and some other remedies were tried, but without the appearance of benefit; and he died suddenly, from an attack of Apoplexy, in the beginning of August following.

## *CASE* 4.

In the winter of 1805, I was called to Mr. FAVRE of Yoxford, who was believed by his attendants to be dying. I found him under a severe paroxysm of difficult breathing, and his pulse labouring, quick, and intermitting; he had not been able to lie down for several nights, and was delirious; his legs and thighs were enormously swelled, and his urine was high-coloured and in very small quantity; the countenance was livid and ghastly. Mr. FAVRE was 73 years of age, and had been many years accustomed to the free indulgence of his taste for spirits, insomuch that he scarcely ever, for a considerable time, was known to go sober to bed. I prescribed for him the DIGITALIS in the usual manner; and his relief from it was very striking, though not quite equal to what I had before experienced. He was obliged to continue it's use for a considerable time; and although it created a great increase in the flow of urine, and the difficulty of breathing became much less urgent, he was not entirely relieved till his mouth became affected by Mercury. He then speedily recovered from all his remaining symptoms of disease, and his strength was gradually restored. He spent the summer very comfortably, notwithstanding his great age, and cultivated his garden as usual; but no remonstrances could prevent his indulgence in the habit of drinking. At the approach of the succeeding winter his symptoms returned, and he died of universal Dropsy, in spite of every means likely to afford him relief. As there was in this case considerable yellowness of the skin, with clay-coloured fæces, I supposed the liver to be diseased.

### *CASE 5.*

Mr. TILNEY is a very respectable schoolmaster at Harleston, in Norfolk; he is 69 years of age, has lived very temperately, and has used little exercise, except at times when he has greatly exerted himself to perform long journies on foot, to which mode of travelling he was particularly attached.—His complexion is dark, and he is of low stature, and muscular, without corpulency.

In the spring of 1806 Mr. TILNEY was attacked with difficulty of breathing, cough and expectoration of frothy mucus; his ankles swelled, and he was unable to use any considerable exertion. He took Squills, Mercury, DIGITALIS in small doses, &c. under the direction of a Physician, without benefit; and his symptoms having alarmingly increased, I was desired on the 15th of May, 1806, to see him. In making this visit I was accompanied by my friend Dr. FOTHERGILL, Physician to the Westminster and Western Dispensaries, then on a visit with me; and we met Mr. STROWGER, an intelligent surgeon of the place, who carefully attended this patient through the whole of his illness. We found Mr. TILNEY propped up in bed with pillows, and labouring under the most distressing degree of difficulty of breathing. He was gasping for breath; and the violently convulsive action of the muscles of respiration, seemed frequently to threaten immediate suffocation. His countenance was pale, and covered with profuse cold perspiration. The pulse was very quick; and intermitted so much, that it could hardly be reckoned; he had obtained no sleep for many hours, and was delirious; the secretion of urine was almost suppressed, and his legs were œdematous.

In this case of Hydrothorax, the worst I had ever seen, and which indeed appeared almost decided, it required all my confidence in the salutary powers of DIGITALIS, to enable me to excite any hopes of it's probable success in the friends of my patient; or even to feel them myself. It was however given, as the only mean that could be at all likely to procure relief. He began with half an ounce of the infusion, which was afterwards increased to six drachms. The bowels were opened with calomel, of which also he was directed to take a grain night and morning. On the 18th a considerable amendment was observed, which had gradually taken place; the infusion had produced some nausea, the urine was increased, and the breathing considerably relieved; the pulse had less intermission, and was reduced to 90; his delirium was almost gone off, and he was able to get some comfortable sleep in his chair. On the 22d, the pulse was 54, and regular; swelling of the ankles and delirium gone, secretion of urine plentiful. He continued the use of the FOXGLOVE another week, when every symptom of his former complaint had disappeared. He now was recommended strengthening remedies, of which he stood much in need; and about three weeks afterwards when I saw him again, he assured me that he felt no remains of indisposition, except that he found he could not walk as formerly, without fatigue. I have since several times seen Mr. TILNEY in perfect health; and a few days ago, in answer to an application to Mr. STROWGER to enquire into his situation, I received the following letter:—

"*Harleston, June* 28, 1807.

"DEAR SIR,—I am happy to inform you Mr. TILNEY is in a high state of health, and has continued so without any interruption to it by a return of his disease. It will not be necessary for me to say much more on the subject after the following:—On Monday last he walked to Norwich, a distance of 20 miles, and finding himself in no degree fatigued, he returned the following day, without any inconvenience to his muscular or respiratory powers.

"I am, Dear Sir,
"With much respect,
"Your's sincerely, &c. &c.
*Dr. Hamilton.* "S. STROWGER."

## *CASE* 6.

The following case was communicated to me by Mr. S. Revans, an intelligent surgeon of Halesworth :—

" Elizabeth Davy, of Rumburgh, near Halesworth, aged 65, was in April last attacked with Dyspnœa, which daily became more oppressive, notwithstanding the use of a variety of medicines. In the beginning of June I was desired to see her ; her Dyspnœa was now so distressing, that she had not been able to go to bed for a fortnight, and for the last week she had scarcely slept at all, even in an erect posture. Her pulse was labouring, and intermitted on the slightest exertion ; she likewise complained of a sense of suffocation, and frequent and copious sweats broke out upon her forehead and face ; her legs were much swelled, and the secretion of urine was greatly diminished.

"From a review of the symptoms of this case, I had no doubt of it's being Hydrothorax; and being acquainted with the event of Mr. Tilney's case, I determined to give the Digitalis a fair trial. I made an infusion of a drachm of the dried leaves in half a pint of water, of which I directed her to take a table-spoonful every six hours; and which, after a few doses, was increased to a table-spoonful and half at a time. After her continuing the medicine for 48 hours, it produced considerable giddiness and nausea; and she then voided a large quantity of urine, which she continued to do, particularly during the night, for a week, when she was completely relieved of the Dyspnœa and all her distressing symptoms; and could walk and attend to her business with more ease than she had been able to do for the last two years.

"About a month back, she had a slight return of the difficulty of breathing, which was removed by the infusion in two or three days, and I have seen her within a week, entirely free of complaint."

In answer to a letter of enquiry respecting the subject of this case, written a few days ago, I have received the following communication from Mr. REVANS:

" *Halesworth, July* 18*th*, 1807.

" DEAR SIR,——I have frequently seen ELIZABETH DAVY since the illness of which she was cured by DIGITALIS; and although she sometimes complains of being unwell, she has had no return of the Dyspnœa or Hydropic affection. Her complaints are merely such as we hear of from the advance of age, and a gradual failure of bodily strength.

" Believe me, Dear Sir,
" Very sincerely your's,
" STEBBING REVANS, Jun.

" *Dr. Hamilton.*"

# OBSERVATIONS

## UPON THE FOREGOING

## *CASES,*

## AND OBJECTIONS ANSWERED.

Some of the above Cases are perhaps not to be surpassed in the severity and apparent danger of their symptoms, and in the speedy and complete relief afforded to the patients labouring under them. They consequently excited some attention in the districts where they occurred, and many remarks and criticisms have been made upon them by different Practitioners, either directly to myself in conversation with their more ingenuous Authors; or, which have reached me by report. These remarks enable me to anticipate the objections that may arise against them, if they shall now become more generally known;

which may also, perhaps, have some weight in removing the prejudices still entertained against the use of FOXGLOVE in Hydrothorax: and in counteracting the opinion that this disease is incurable—an opinion very generally entertained, and which cannot be too often decidedly contradicted.

The following are the chief objections (independent of those advanced against the general employment of FOXGLOVE, already noticed) which have been made against those cases.

1st. That the DIGITALIS only affords temporary relief in Hydrothorax; and, that no person completely recovers from it, by this, or any other remedy.

2d. That Hydrothorax is usually combined with deranged structure of the lungs, heart, or large vessels; and that, consequently, no permanent relief can be obtained by any mode of treatment. Thus the 1st and 3d cases were decidedly pronounced by the Medical Gentlemen who attended them, to be caused by organic disease; and the sudden death of both these patients was afterwards adduced in support of this opinion.

3d. That the relief obtained could not fairly be attributed to the DIGITALIS alone, as Calomel in every instance was also given. And it has been urged, that the disease had been mistaken for a fit of Asthma, Angina Pectoris, &c. &c. Such observations have not arisen from those acquainted with the symptoms of these diseases, and I may therefore be excused from paying them any attention.

These objections have, in several instances, proceeded from Medical Gentlemen of candour, and of considerable professional information. Yet, they shew little acquaintance with the nature of Hydrothorax; by which I am confirmed in the opinion, that this disorder has not been so much attended to as it's importance demands.

In answer to the first, it may be sufficient to refer to the second, the fifth, and the sixth cases. Perhaps, however, it may be said that the second was not, strictly speaking, a case of Hydrothorax, but of Anasarca Pulmonum. This point I readily concede; for whether the fluid be contained in one cavity or another, seems unimportant. The relief afforded by DIGITALIS is the same in every instance, as far as experience enables us to determine; and every species of effusion is alike pregnant with danger to life. That Hydrothorax is apt to recur cannot be doubted. The causes which originally produced this affection often continue to act with full force;—it is a disease of old age, and generally of debility;—and perhaps it is impossible that any part of the body can have been the seat of such a disorder, without being thereby rendered more liable to it's return. That it does return, therefore, is the inevitable consequence of bad habits, advanced age, and disease.—But, that it can completely be cured by the FOXGLOVE, is evident from the 5th and 6th cases; and, that it may be repeatedly suspended, and finally entirely overcome, after it had several times returned, may be justly inferred from all the examples given both by Dr. MACLEAN (Appendix, No. II.), and myself. I presume, after duly considering the history of these cases, it will no longer be denied, that Hydrothorax can completely be cured by FOXGLOVE, &c.—Indeed it would seem to me equally correct to state, that Ague cannot ultimately be cured by Peruvian Bark; or, Lues by Mercury. The recurrence of the disease ought not, therefore, to impeach the utility of the mean successfully employed in it's relief; and, if it possess the power of frequently effecting this purpose, the more are we indebted to the benignant influence it is capable of exerting.

Had it accorded with the plan of this work to have entered fully into the history and causes of Hydrothorax, the connexion between this disease and deranged structure of the Thoracic Viscera, would have been fully pointed out. Effusion into the cavity of the chest is often the effect of Inflammation, and of the adhesions and derangement of structure which sometimes follow it. When Hydrothorax is thus caused, or accompanied, it's cure becomes necessarily more difficult. Still it may be relieved, and I have endeavoured to shew that this should, in every instance, be attempted. If it be insisted upon that Mr. WARNER's sudden death was occasioned by organic disease, the perfect ease for a long time afforded by the FOXGLOVE in his case, is the best argument I can adduce of it's powerful influence over such affections. But I do not conceive that there was deranged organization in either Mr. WARNER's or Mr. HAYLE's case; the relief in each was complete, and no symptom of disorder whatever was observed to remain, except some intermission in the pulse of Mr. HAYLE, which continued during his life, and which might be caused by adhesion of the pleuræ to each-other*, or by different causes. In the 1st, death was evidently occasioned by the recurrence of Hydrothorax, which the patient had neglected to secure the means of preventing. And in the 3d, the Hydropic disposition seems to have been entirely overcome. In the early part of April this patient was attacked with Palsy, and in August following he died of Apoplexy, without the recurrence of any Hydropic symptom whatever in the intermediate time.

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* BAILLIE's Morbid Anatomy.

It must therefore either be admitted that there was in these cases no organic disorder; or, that it was overcome by the powers of DIGITALIS. And I have never presumed to state that in advanced life this medicine could prevent the approach of *every* disease; or, that it could act *when it was not exhibited.*

I have already observed that Calomel is supposed to increase the action of every diuretic remedy; and, especially if there be room to suspect that Hydrothorax is combined with organic disease, the aid of this medicine becomes essential. I have found this combination of signal use, and although I must be of opinion that the chief and immediate relief is fairly to be attributed to the FOXGLOVE, so long as this can be produced, I shall not dispute concerning the means by which it is effected.

# APPENDIX,

## No. II.

# LETTER,

## *With Observations on Digitalis,*

## AND CASES OF HYDROTHORAX.

### BY DR. MACLEAN.

*Sudbury, July 28th,* 1807.

Dear Sir,

In our conversation on the subject of Digitalis, when you did me the favour of passing a day with me lately; you expressed some surprise on my observing that I had met with certain cases of Hydrothorax, connected with peculiarity of constitution, in which this herb, when administered alone, produced no sensible increase of the urinary secretion; as you had, in this kind of Dropsy, found it invariably successful, with no other addition than Mercury; and in the letters you have since addressed to me, you request to be furnished with a case or two in point, which you wished to publish in your work, as your object was to give a just view of the action of this powerful remedy. Regarding the subject as extremely interesting, I have great pleasure in complying with your wishes, as far as my time will permit. The cases I send you are selected from about 80 well-marked instances of Hydrothorax in my report-book, beginning with the first in which the FOXGLOVE, of my own growth, had a full and fair trial, and ending with one now under my care. You have, doubtless, noticed what Dr. WITHERING has said on this subject (p. 189) in his excellent work. These observations, as well as those generally advanced by this accurate but modest writer, are entitled to the greatest attention, and have been for the most part confirmed by my experience. If, in addition to these, the limbs be of a dark livid hue; the patient of a full corpulent, or what is termed, a *cold phlegmatic habit;* the bowels costive, more especially if they require the aid of active purgatives; very little, if any, advantage is to be derived from the FOXGLOVE, either alone or in combination, in the fullest doses, and administered with the usual precautions: on the contrary, by the distressing sickness, and other unpleasant symptoms which it produces, it seems to retard the salutary operation of other remedies. It is proper, however, to remark, that when the disease occurs in such habits, the cure is in general tedious and difficult. Experience, therefore, has taught me not to build my hopes on the FOXGLOVE alone; and if I have had more than ordinary success in the cure of this formidable disease, it is to be attributed more to the united powers of the combinations used, than to any individual ingredient entering their composition. DIGITALIS, Squills, Calomel, Crystals of Tartar, the fixed Vegetable Alkali, and a few other diuretics, when separately administered, will very seldom be found permanently to cure the disease; but by selecting, blending, and combining them together in certain proportions, according to the particular circumstances of every case, which in no two instances are precisely alike, each of these seems to acquire additional efficacy, and the most salutary advantages will result. And certain peculiarities of constitution will be found, in which some of these cannot be administered. Hence the necessity of the knowledge of the art of judicious selection and combination, which can only be acquired by long experience, aided by a close and patient attention to the operation of medicine, and the phenomena of the disease. I shall only observe, that by means of the combinations I have been in the habit of using, my object invariably has been to accomplish at once, or by one indication, what is generally attempted by three. Thus, while administering remedies for evacuating the water; the removal of any organic affection, or other cause, which may have occasioned its effusion, retard or prevent its absorption, as well as the restoring the lost tone and strength of the habit at large, or of any particular organ, which generally forms a prominent feature of the disease; are held in view at the same time: Hence, as these vary in degree and kind in every case, so those combinations must be varied also in the same proportion; and instead of increasing the degree of debility already existing, the strength very generally improves from the beginning.

## *CASE* 7.

Mrs. Ewer, of Belchamp St. Paul's, Essex, has several times consulted me. She is married, 40 years of age, and the mother of several children; of a constitution naturally delicate, and much weakened by frequent parturition, and by the cares and fatigue of a large family. Her complaints indicated great weakness and irritability of the heart and lungs, having been subject to hurried and difficult respiration, attended frequently with palpitation, or *fluttering* as she termed it, of the heart, increased upon bodily exertion or emotion of mind.—From these complaints she always received benefit by the means recommended. On the 12th of March, 1796, she again consulted me, and I find in my case-book the following memorandum respecting her disorder :—" Symptoms of Hydrops Pectoris." A blister was applied to the chest, and some expectorant medicines were prescribed, by persevering in the use of which, with appropriate regimen for some time, her complaints gradually subsided, and she continued to enjoy her ordinary health till the spring of 1798, when they returned : and I find her again on my report-book June 23d, with similar complaints, for which similar remedies were prescribed. July 13th, 1798 :—No relief from the last medicines. In every respect worse. Respiration very much interrupted, especially on motion, or on lying down in bed. Pulse quick, feeble, and extremely irregular ; urine very small in quantity, and high-coloured, with sediment ; ankles and legs œdematous. Supposes herself in the fifth month of pregnancy ; and there is every reason to suspect the fœtus has been dead for a fortnight, in which period her complaints have made very rapid progress. Has for some months suffered great mental anxiety and uneasiness, from causes unnecessary to state here; to which her present illness is to be attributed.

R. Digitalis Purpur. fol. pulv. gr. j.
Confect. aromat. q. s. ft. pilul.
nocte maneq. cum cochlear. ij. mistur. infra præscript. Sumend.

R. Fol. Digitalis Purpur. siccat. ʒj.
Infunde in Aq. Puræ bulientis ℥viij. et cola. dein.

R. Infus. Colat. ℥v.
Spt. Juniper C. ℥ss.
Spt. Ætheris Nitrosi.
Spt. Ætheris Vitriolic C. sing. ʒij. M.

Particular injunctions were given to discontinue the Foxglove as soon as it produced any of it's unpleasant effects.

I heard no more of her till the evening of July 17th, when my immediate attendance was desired. I found her retching, and bringing up at times a dark coloured matter, like coffee grounds; the extremities were cold; the pulse extremely small, fluttering, and irregular; she had frequent faintings; or to use the language of those about her, "they could not keep life in her;" the body was covered with cold sweats; she had been in this state for several hours: the cause of these alarming symptoms was sufficiently obvious. On enquiry, I found she had experienced immediate relief from the medicines; that the quantity of urine was very much increased; the swellings nearly gone, and that she was considered as mending very rapidly till this morning, when the stomach began to be disordered. I found also that she had been under the influence of the Foxglove nearly two days; yet, in direct contradiction to the directions rigidly enjoined, she was desired to continue it this morning. It was in vain that relief was attempted through the medium of the stomach; for every thing liquid, even in the smallest quantity, was immediately rejected. By an

Anodyne Glyster, warm Anodyne Embrocations rubbed into the Epigastrium and Abdomen, and Feet, small pills of solid Opium with Confect. Aromatica; all the urgent symptoms subsided in a few hours, and I had the pleasure of leaving my patient in the morning quiet and composed.

She continued gradually to mend from this time till, about a fortnight after, she miscarried of a fœtus which bore evident marks of having been dead at the time she apprehended. The water now began to accumulate in the chest and legs with unusual rapidity, and with it all her former distressing symptoms returned.—But although her strength was nearly exhausted, the water was speedily evacuated by the same means; and by a combination of tonics with diuretics, she was restored to health in a few weeks.—She has had no return of the dropsical symptoms, but has had two or three attacks of her former complaints, and always received advantage from medicine.

On the whole, her health has been of late years improved.

In every point of view this case will appear interesting: An amiable woman has been rescued from the most alarming state by a remedy which, by the most flagrant inattention, had nearly proved her destruction.

The result of this case impressed on my mind so favourable an opinion of the FOXGLOVE, that I determined to direct my attention more than ever to it; and from this period it has always formed a part of my remedy in Dropsy; and my failures hitherto having been as much owing to the quality of the herb used, as to my ignorance of the proper dose and mode of exhibition, I furnished the Practitioner with whom it was prescribed with a portion of the leaves out of my own garden. Having been absent from Britain when WITHERING's excellent work was published, and for some years afterwards, I had not the good fortune of seeing it at this time, and of borrowing light from so safe a guide.

## *CASE* 8.

June 5th, 1797, Mr. Carr, of Boxford, aged 66, called for my advice.—He was of the middle stature, neither robust nor muscular; not addicted to any excess in drinking; within a few years he had retired from an active business, and lived a sedentary, studious life; but he enjoyed good health before the illness to which he dates his present complaints.

Breathing, quick hurried and anxious, especially on any sudden bodily exertion or emotion of mind, attended frequently with palpitation, and what he called a "fluttering" about the heart; pulse, feeble irregular and intermitting; feet and ankles œdematous towards evening, and readily pitting on pressure; urine natural in every respect; can lie down in bed on either side without any inconvenience; has never been roused from sleep by a sense of suffocation; appetite good; bowels regular; bodily strength much impaired.

About three years since had an attack of Hemiplegia, in which I attended him, and from which he soon recovered; a slight degree of weakness of one side, and distortion of the mouth, only remaining.—In this attack the pulse intermitted, since which it never recovered it's regularity; and he remarked that his breathing had not been so free as before.

Being about to remove to Colchester, his native place, I was glad of the opportunity of committing my sentiments of his case to paper, to his nephew Mr. NEWELL, a Practitioner of experience and acknowledged reputation, who resided there; as well as of the plan I thought best suited to obviate present and remote evil.

Having been fortunate in meeting with five well-marked cases of watery effusions into the cavities of the chest, some of which I was now attending, and which were doing well; since the subject of the former case fell under my care; I had no hesitation in predicting the approaches of a serious and formidable disease, namely, serous effusion, most probably, into the Pericardium;—and that although it might not as yet have commenced, such a morbid state of the heart existed as would eventually, and, without proper precautions, speedily lead to it.

In addition to the medicines prescribed, I directed a nutritive, chiefly meat, diet, with a glass or two of old generous wine at dinner; exercise on horseback daily; diligent frictions to the whole body; in short such a plan of diet and regimen as was likely to give strength and tone to the habit, and to excite an active and vigorous absorption.—He was desired to refrain from malt liquors.

℞. Decoct. Cinchonæ ℥vij.
Tinct. Card. C. ℥ss.
Sp. Ætheris Vitriolic ʒij. M.

Sumat Cochlear iij. ampla mane et meridie cum pilul. ij. infra Præscript.

R. Massæ Pilul. Scillæ
Myrrhæ sing. ʒj.
Syr. Tolutan. q. s. ft. Pil. xxx.

The above plan of regimen and medicine was rigidly adhered to, and in his occasional visits to me the amendment in his health was very obvious. In the course of a few weeks he was so far recovered as to obtain my sanction to discontinue medicine; but was directed not to relax in the regimen, and if he should perceive any symptoms of a relapse, to apply for immediate advice.

Not many months had elapsed before his symptoms returned, with the addition of diminished secretion of high-coloured urine; increased difficulty in respiration, and inability of lying down in bed. The DIGITALIS was now prescribed with the happiest effects.

In March 1800, I had a letter from Mr. Newell, in which he observed,—" Our " friend Carr is finely; I have lately experienced equally good effects in two cases " similar to his."—After this period I saw him occasionally; he continued to have returns now and then, and the disorder seemed to have assumed more and more the character of Hydrops Pericardii;—but the intervals were longer, and the Digitalis never failed to remove them; so that for several years prior to his death he continued to enjoy tolerable health; to use regular exercise; and to make excursions on horseback, to visit his friends in the country.—The latter end of 1806 I last saw him, after an attack of Hemiplegia; and on the 21st of December he died of exhausted constitution, the consequences, it might fairly be said, of a different disease, in the 75th year of his age.

## *CASE* 9.

On the 28th of February, 1805, I was desired to visit Mrs. Fisher, of Colchester.—

She was about 65 years of age; of a dark complexion, very fat and corpulent; had lived a sedentary life for several years, and been confined to her chamber for some weeks. The leading symptoms were—extreme Dyspnœa, increased on the slightest motion, or attempt to lie down; a cough; considerable anasarcous swellings of the whole body, the face, neck, and hands being œdematous; urine very small in quantity, of a dark brown colour, with little sediment; bowels costive; no thirst; appetite impaired; pulse 80 and full, but laboured; countenance of a dark livid hue, expressive of great anxiety and suffering; conjunctiva of a yellowish cast; constant drowsiness, but never enjoyed natural rest, her sleeps being short, hurried, and often suddenly roused, from a sense of suffocation, and great anxiety about the Præcordia: The fear of the return of this dreadful symptom contributed much to disturb her sleep. Having been unable to lie down in bed for some months, and chiefly confined to her chair, she suffered much pain from the enormous size of the legs. The Abdomen contained much fluid.

She had been subject for years to difficulty in breathing, and cough, which for some months had become more constant and regular, so as to oblige her to lie with her shoulders high, and frequently to sit up in bed. At length her ankles and legs began to swell, and the urine to diminish in quantity.

She had been attended by a Physician who, I understood, regarded her case as Asthma, and prescribed the common anti-spasmodic remedies, without relief. The case was considered as hopeless by the patient and her relatives. From the success I had experienced under circumstances apparently more unpromising, I held out a prospect of relief, provided the restrictions I should think it necessary to impose were rigidly complied with.

Quamprimum admoveatur Emplastr. Cantharidis satis amplum Pectori.

R. Calomelan. — Resin. Jallapii sing. gr. iij.
Crystallor. Tartar. Pulv. ℈j. simul in pulverem tere et Syr. Zingiber. fiat Bolus h. s. s. et pro re nata repet.

R. Infus. fol. Digitalis P. (ʒj. ad ℥vij.) ʒvj.
Tinct. Card. C. ʒj.
Spt. Æth. Nitros gtts. 50. M. ft. haust. mane, meridie, et vespere sumend. incipiens cras.

R. Calomel. — Scillæ Pulv. sing. gr. vj.
Crystallorum Tartari Pulv. ℈ij. Syr. Zingiber. q. s. ft. pil. xij.
sumat ij. singul. noct. h. s.

The body and legs were desired to be rubbed morning and evening with camphorated oil; weak cold gin punch, acidulated with Crystals of Tartar, to be used freely for drink; a glass or two of Madeira or Sherry to be taken at dinner; and the diet to consist of light, nutritive, chiefly animal, food. The usual directions were given to Mr. Gretten, the Family Practitioner, to discontinue the Foxglove as soon as it should produce any effect on the stomach, bowels, head, or pulse, altho' the urine should not be increased.

By perseverance in the above plan, the urine gradually increased in quantity, and assumed it's natural appearance; the swellings subsided; she was able to lie down in bed, and breathe with freedom in a recumbent posture; all the alarming symptoms vanished, and in the course of a few weeks she was restored to her ordinary state of health, and has remained free from the dropsical symptoms ever since.

The progress was at first very slow, which was to be attributed to the small quantity of liquid used, under the erroneous idea, which is too often encouraged by the Practitioner, that as she voided little urine, it must necessarily accumulate; and to the medicines having been taken very irregularly.

The Calomel was continued until the gums were affected; to which, with the combination of Squills, and Crystals of Tartar, aided by the free use of diluents, the cure is principally to be attributed.

I have seen this patient several times since, and prescribed for her once under a severe cough, but the dropsical symptoms did not return ; and her son informed me lately, she continued in tolerable health.

### *CASE* 10.

Early on the morning of the 17th of June last, my immediate attendance was desired on the Rev. Mr. —— of —— near Harwich. His age 51, of tall stature, naturally robust and muscular, but of late years disposed to corpulency. His symptoms were—extreme difficulty in respiration, which has for some weeks prevented him from lying down in bed, or from walking but with great deliberation : When going up stairs, has been obliged to rest some minutes to take breath, before he reached his chamber; and although propped up by pillows, nearly in a sitting posture, in bed, he is suddenly roused from sleep by a sense of suffocation, and extreme anxiety about the Præcordia, which obliges him to get up and walk about the room; of late this has happened three or four times every night; urine very scanty, of a dark red colour, with very little sediment; pulse extremely irregular and intermitting; legs œdematous up to the knees, and readily pitting on pressure; tongue foul, with great thirst; no appetite; bodily strength much impaired; face and conjunctiva of a deep yellow tinge; and he brought up some yellow bile this morning. Bowels costive; memory much impaired, with giddiness of the head and confusion of ideas at times; constant drowsiness, amounting sometimes to stupor; hands and feet cold.—Has not been addicted to intemperance in the use of intoxicating liquors, but in the habit of indulging very freely in large draughts of beer, both at meals, and at all times when heated by exercise.—Has used much bodily exercise till of late years; has lived a sedentary and studious life.

For nine years has been subject to a peculiar uneasy sensation in the lower part of the Abdomen, from the Umbilicus to the Pubes, for which he has been in the constant habit of using active purgatives three or four times a week, as the only means which, he fancied, relieved him.

About two years since, when stooping to measure timber, was seized with a giddiness of the head, for which he went to town, and put himself under the care of an eminent Physician. It was treated as an attack of Apoplexy, for which copious V. S. and cupping were frequently used. He returned to the country much reduced in flesh and strength.

The first symptom of his present complaint was perceived in February, 1806, when he was suddenly roused from sleep, and thought himself in the act of dying. He had another attack when doing duty some months afterwards, and a third in December following; the pulse intermitted each time; it recovered it's former regularity after the first and second attacks, but has been more or less irregular since the third.

He has been attended by three Physicians of the first eminence in town, and by one in the country. Their attention appears to have been principally directed to the affection of the head, and to the peculiar sensation of the Abdomen, acknowledging they could do nothing for the affection of the chest. The result of a consultation held by two of them in town, in April last, was the recommendation of a seton in the neck, and mild inert palliative medicines. On the suggestion of Mr. NUNN, of Manningtree, the DIGITALIS was once prescribed by one of them, but soon abandoned.

On the presumption that his complaints originated from water in the chest, Mr. NUNN, and Mr. SILK his partner, who constantly attended, prescribed the DIGITALIS in January and March last, with sensible advantage; as the pulse recovered it's natural regularity both times: and Mr. NUNN reminding me of a case, apparently as hopeless as the present, in which I recommended the FOXGLOVE, with him, with complete success, lamented that the prejudice against it here was so strong, that he was precluded from prescribing it again.

On assuring the patient and his family, that the medicines I should recommend would produce no violent or unpleasant effects, they left me to proceed as I should judge fit, unfettered by any restrictions. Had a blister applied to the chest, and a Calomel and Squill Bolus last night, which were the means of procuring some disturbed sleep.

R. Calomel. gr. vj.—Kali Vitrolat.
Myrrhæ—Aloes sing. gr. x.
tere simul. et Confect. Aromatic. q. s.
ft. Pil. viii.—sumat ij. statim et repr.
pro rê natâ.

R. Calomelan gr. jss.—Scillæ Pulv. gr. j.
Crystallor. Tartar. Pulv. ℈j —Confect.
Aromat. q. s. ft. Bolus sing. noctibus s.

R. Infus. Digital. Pur. (ʒjss. ad ℥viij.) ℥vj.
Sp. Ætheris Nitrosi ʒss.—Tinct. Cort.
Aurant ʒj.——Kali pp. gr. x.——Olei
Menthæ Piperit. gt. j. M.
ft. Haust. mane, meridie, et vespere, per
dies tres, vel quatuor s.

He was directed to refrain from beer; but to drink freely of negus or gin-punch, acidulated with Crystals of Tartar; to have a few glasses of Madeira daily; and when his appetite returned, to have solid nutritive food, instead of the slops to which he had been accustomed. Mr. Nunn was requested not to continue the Digitalis beyond the third day, if it should occasion the slightest nausea or unpleasant effect; and to substitute the Infus. Gent. C. for it; at all events not to persevere in it after the fourth day, having appointed to see him on the fifth.

June 22d:—From voiding only half a pint of urine daily for some time prior to my first visit, he passed, by measure, five pints every day after the first 24 hours, with proportionable relief of every symptom. For two days had been able to lie down in bed, and enjoyed sound, uninterrupted, refreshing sleep: swellings of the legs gone; appetite and strength returning; was able to walk without assistance an hour and a half yesterday in his garden. Has had occasion to use the Pills only once, the Boluses having procured two motions daily without griping. No sickness or any unpleasant symptom from the FOXGLOVE. Took one draught to-day with the Infus. Gent. C.

Pergat in usu Haust. cum Infus. Gentian C. vice Infus. fol. DIGITALIS.

Repr. Boli singulis noct. h. s.

June 29:—By previous appointment came 12 miles to meet me: Has continued to mend; rides out every day in an open chaise, and drives himself; appetite too keen, and he has indulged too freely, especially at night; in consequence of which his stomach was disordered one night; and he has complained of giddiness and confusion of ideas at times.

Applr. Empl. Canth. Nuchæ.

R. Infus. Gent. C. ʒjx.—Tinct. Cort. Aur. ʒj.—Acidi Nitrosi gt. jv. ad vj. M. ft. Haust. cum Pilul. olim Præs. No. ij. s. Repr. Boli ut antea.

July 8:—Came 17 miles to meet me, as previously agreed upon, and drove himself; continues to improve progressively; appetite more natural; and digestion good; head much relieved by the blister; has transacted business, and written letters, which required mental exertion. Walked up a hill yesterday a mile from home, and back again without inconvenience. Has recovered his natural florid complexion. Medicines to be continued, the draughts twice a day only.

July 22d:—Came as before to meet me. The day being excessively sultry, and being exposed for near four hours to an intense Sun, I was surprised to find him very little affected by the heat.—On the 13th he complained of great pain in the lower part of the Abdomen, and in the course of the evening had three motions, consisting chiefly of dark grumous blood and a glutinous-like substance; the last without any fæculent matter. He mentioned with much satisfaction, that he has been since free from this painful complaint, which had more or less constantly harrassed him for nine years; and that for three nights the bowels performed their functions regularly without any assistance.—The gums being slightly affected, directed the Boluses to be taken only occasionally. Having been formerly recommended the shower bath, I permitted him to try it (especially as the weather had been intensely hot) every other morning. Acknowledges himself very much improved in every respect, and talks of making an excursion to Westmoreland in an open carriage. Was desired to go on as before*.

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* A case in many respects similar to this interesting example of the efficacy of DIGITALIS, and of the neglect of it's powers, unfortunately too common, has lately been reported to me.—A Gentleman labouring under symptoms denoting an extraordinary affection of the lungs, which

Many comments might be made on this case, but I shall refrain from offering any, having already extended this letter, and trespassed on your time, far beyond my original intention.

A patient of mine fell under the care of a Professor of a celebrated English University, a few years since: When informed that she had been cured some months before by the Digi-

baffled the skill of his ordinary Medical Attendants, summoned no less than five distinguished Physicians to his aid, and as many distinct opinions were given upon his case, which is said not to be very uncommon on such occasions; fortunately for the patient, one of these supposed the possibility of the effusion of water into some of the cavities of the chest, and suggested the use of Digitalis; but this view of the case was opposed on all hands.—When, however, it was found that every other mean of relief had failed, and that he was drawing towards an end of all his sufferings, the Foxglove was resorted to, as the least of two evils.—The consequences were speedy, but not fatal; in a few days this Gentleman astonished his friends by making his appearance in the upper room of the Exhibition at Somerset-house. But this exertion was imprudent, and he was seized in consequence of it with a severe paroxysm of difficult breathing; he, however, soon recovered again by the same plan, and is now, I understand, in very tolerable health. W. H.

TALIS in combination with other remedies, he observed, "He never prescribed such deleterious drugs; that he once ordered it, "and that it killed his patient!"

I confidently look forward to the period when this valuable medicine will completely triumph over the obstacles which prejudice and ignorance have hitherto opposed to it's progress; and doubt not but your work will contribute to the attainment of this desirable object. You know my sentiments of it; and you know what I have done with it, as well as my intentions, which, *deó volenté,* I trust may be accomplished ere many months elapse.—Sincerely wishing you success in all your undertakings, believe me to be

Very faithfully and truly your's,

L. MACLEAN.

*Dr. Hamilton.*

☞ The Reader is requested to correct the following ERRATA:

In page 7, line 5 of the Note—for sceptism, read scepti*cis*m.
Page 15, line 8—for means, read mean.
—— 21, —— 1—for Fuchius, read Fu*s*chius.
—— 27, —— 11—for appear, read appear*ed*.
—— 42, —— 3—for George, read *James*.
—— 123, —— 5—for ever, read *n*ever.

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Ὁ βίος βραχύς, ἡ δὲ τέκνη μακρή